OLYMPUS

M521/ M526
AU640

Service Manual

Rev. 1300

Service Group
Mishima Olympus Co. Ltd.

Revision	Date
00	----.--.--
01	----.--.--
02	----.--.--
03	----.--.--
04	1999.07.09
05	1999.11.25
06	2000.03.11
07	2001.07.19
08	Not issued
09	Not issued
10	2002.03.15
11	2002.08.05
12	2003.01.16
13	2003.06.09

Revision	Date

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■ Product Outline

Intended markets, intended users, use purpose

1. Intended markets

Japan/America/Europe/Asia, Australia

2. Intended users

Japan: Small hospitals (about 100 samples/day), inspection centers
America, Europe, general area: Medium-sized hospitals (about 200 samples/day), inspection centers

3. Use purpose

Intended user		Use purpose	Japan	America	Europe	Asia
Inspection centers	Central inspection room	Routine inspection unit				
		Single item inspection unit				
		Special item inspection unit				
	Satellite laboratory	Routine inspection unit				
	Branch laboratory	Routine inspection unit				
Hospitals	Central inspection room	Routine inspection unit				
		Special item inspection unit				
		Emergency inspection unit				

Market position and relation to competing units

1. Position

As a grade-up of the AU600, the specifications are in common with the AU400, and the line-up now covers the biochemistry market for system business correspondence machines.

2. Relation to competing units

Manufacturer	Product	Main features	M521 differentiation contents
Hitachi	7170	45 items x 800 tests/h, random access machine, sample dilution, four-step reagent dispensing	48 items x 800 tests/h, maintenance via communication function, operationality and STAT characteristic by joint use of rack method and turntable method, common consumables
Toshiba	TBA-80FR	50 items x 800 tests/h, random access machine, sample dilution, ID system, automatic start-up, shut-down	
Rosch	INTEGRA	71 items x 600 tests/h, reagent cassette method	
J & J	VITOROS 950	900 tests/h	

- Correspondence to laws

1) External standards to be acquired

For Japan:	Pharmaceutical Affairs Law
	Conforming to the EMC guideline for electrical appliances for medical use
For OAI:	FDA 510K (self-declaration by OAI)
	FCC part 15, subpart B, class A
	CSA C22.2, No. 1010-1
For ODC:	CE mark, EMC emission EN55011 (conforming to CISPR11)
	Immunity EN50082-2
	Low-voltage instructions EN61010-1
	H-mark
For Australia:	Australian EMC regulations, C-tick mark (emission CISPR11)
For all destinations:	Emitted electromagnetic field (test represented by that for ODC)

2) External Regulations to be Observed Strictly

For Japan:	Law for recycling of bottles and packaging
	Waste processing law
	Water contamination prevention law
	Sewage law
For OAI:	FDC law, part 1040.10 (safety of lasers and other light-emitting equipment)
	FDC law 21CFR, part 820 (GMP)
	Regulations for used batteries, CE4212
	Regulations in regard to packaging materials containing hazardous substances
For ODC:	Instruction in regard to batteries (Europe)
	Instruction in regard to packaging waste (Germany)
	Safety standard for test equipment for hospitals (Great Britain)
In common for the entire world:	
	Montreal protocol (ozone layer protection)
	PL law
	Regulations in regard to asbestos
	Export management regulations in regard to the security treaty

- Correspondence to laws and regulations for M526

1) External standards to be acquired: Only the changes from the present AU640 are listed.

For Japan:	As the product name does not change, "product registration" according to the Pharmaceutical Affairs Law will not be made.
For OAI:	QSR regulated by the FDC law of the FDA shall be observed strictly.
	FDA 510K (self-declaration by OAI)
For ODC:	IVDMD instruction
For general areas:	As the product name does not change, there is no corresponding work.
For all destinations:	Emitted electromagnetic field (test substituted by correspondence to the IVDMD instruction)

Service life

5 years or 6 million tests
(4000 tests/day x 25 days/month x 12 months/year x 5 years = 6 million tests)

Product life

5 years

■ Special features (sales points, etc.)

(1) Easy connection to an automated system because of the rack-type sampler
(2) Use of glass cuvettes offers:
- Reduced running costs
- Maintenance-free operation
- Environment protection

(3) Maintenance-free operation for the cuvettes by dry pass
(4) Reduced running costs with a small required minimum sample quantity
(5) Consideration of environment protection by use of a refrigeration system not using freon
(6) Data management software with CLIA correspondence
(7) Improved operationality by use of Windows NT
(8) Reduced running costs by use of reagents, consumables, and operationality in common with the AU400
(9) Maintenance using the communication function is possible.
(10) Measuring of high-value samples or raw urine is possible using the sample test dilution function.
(11) Improved safety by collision detection function and sample clogging detection function
(12) Substantial functions like cyclic QC because of a STAT table with cooling function, etc.

■ Limiting conditions (use conditions, use environment, use prohibitions, etc.)

● Installation and use environment conditions

1) Installation conditions
   - A place not exposed to direct sunlight
   - A place with little dust
   - A level place with little inclination (inclination: 1/200 or less)
   - A place with few vibrations
   - A place where the load capacity of the floor can withstand the machine weight sufficiently
   - A place with an altitude above sea level not exceeding 2000 m

2) Power Supply, Noise Conditions
   - A place with no distribution panels installed within 10 m from this equipment
   - A place without severe voltage fluctuations (voltage fluctuations within ± 10%)
   - A place without machines emitting abnormal noise in the vicinity
   - In the room where this equipment is used, the power supply of portable telephones and portable wireless equipment shall be switched off.
   - The installation place shall have no corrosive gases.

3) Temperature and Humidity Conditions
   - The temperature at the time of use shall be in the range from 18 to 32°C, and the change rate shall be within ± 2°C.
   - The heat radiation of the equipment is about 10080000 J/h.
   - The humidity range at the time of use shall be from 40 to 80% and there shall be no condensation.
   - The temperature and the humidity of the installation environment shall be 5 to 40°C and 15 to 90% respectively.

4) Water Supply and Discharge Conditions
   - A faucet shall be located within 10 m from the water supply port of this equipment, as well as a discharge port with a height of 0.1 m or less (inner diameter: 48 mm or more). (The inner diameter of 48 mm for the discharge port takes only the discharge tube of the AU640 into consideration.)
   - The purity of the deionized water shall be so that the electric conductivity is 2μS/cm or lower (resistivity: 0.5 MΩ or more).
   - A filter of 0.5μm or less shall be used on the outlet side of the water supply equipment.
   - The water pressure shall be in a usable range: 29.4 to 490 Pa
   - Water use quantity (M521)
   - Mean water use quantity: (50/60 Hz) 40 L/h
   - Max. momentary water use quantity: (50/60 Hz) 2.7 L/min (duration: 41 sec)
   - Water use quantity (M526)
   - Mean water use quantity: (50/60 Hz) 33 L/h
   - Max. momentary water use quantity: (50/60 Hz) 1.5 L/min (duration: 10 sec)

5) Floppy Disks

   Floppy disks shall be stored at a place with little magnetic influence.

● Caution items and prohibitions

For general caution items, reference shall be made to the contents of the notification by the Secretariat of the Ministry of Health and Welfare, No. 495 of June 1, 1972, listed under the operation manual.

In addition, the caution items in the operation manual and the contents of the caution plates on the equipment shall be observed.

● Equipment user

Persons using and operating the equipment shall have been trained by our company or by a person trained by our company.

■ Overall Specifications

Method

Discrete single line/multi-test patient-oriented method

Composition

Analyzer, data processor (personal computer), printer, separate units for ANL and DRP

Sample types

Serum, urine
For the analysis parameters, one more type can be set for each item in addition to serum and urine.

Number of simultaneous analysis items

At the time of item selection input: Max. 51 items (including the three ISE items)
At the time of special reagent use, LIH is included in the number of items, but it is not included when not used.
Possible number of reagent bottles which can be set: R1/48, R2/48

* 99 analysis conditions can be memorized, and two items can be set per bottle.

Processing capacity

Main unit: 800 tests/h, at the time of ISE connection: Max. 1200 tests/h
ISE by itself: 200 samples/h

Analysis method

1. One-point method - end point
2. Two-point method - self-blanking compensation at the end point
3. Proportional method
4. Fixed method
5. Ion electrode (ISE)

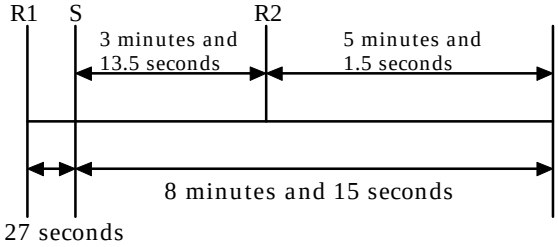
* ISE is an option.

Reaction liquid quantity

150 µl to 550 µl

Reaction time

Max. 8 minutes and 15 seconds (2 steps)



Reaction temperature

37°C (mixture temperature accuracy: ± 0.3°C)

Items which can be analyzed

1. Clorimetric method
   Enzyme/lipids/protein/sugar/nitrogen compounds/inorganic complements/others (TBA etc.)
2. Turbidity method
   IgG/IgA/IgM/C3/C4/RFCRP/ASO/transferrin/others
3. Latex coagulation
   RF/CRP/ASO/others
4. Homogeneous EIA (EMIT)
   DAU/TDM/others
5. ISE
   Na/K/Cl

* ISE is an option.

Serum information

The degree of lipemic, icterus, and hemolytic can be measured and step display is possible.
A method using a special liquid and a method using a liquid with no absorption in the visible range can be selected.

* Step display judgment level setting is possible.

Accession

Item selection is possible individually or with joint group specification.
Item selection input methods

1. Keyboard
2. Online
3. Mouse
4. Touch screen (option)

Item selection input is possible for a maximum of 8000 samples per index.
Up to 51 items can be accepted per sample.
Input of the patient information separate from item selection is possible.

* A total of 30000 samples can be memorized.

Repeat run

Automatic repeat run/manual repeat run is possible.
Sample quantity: Normal, increased quantity, decreased quantity

Warm-up, standby

Use with normal standby is possible.
Warm-up time: 20 min (90 min after EM STOP)
Automatic power ON/OFF possible (fixed sequence)

* The automatic start function does not recover in case of power failure.

Input methods

1. Key input interactive with the CRT
2. Online
3. Mouse
4. Touch screen

Japan: Japanese display
America, Europe, Asia: English display

Output methods

1. CRT display
2. Printer printing
3. Hard disk
4. Floppy disk
5. Online (RS232C)

STAT operation

Start by one-key operation (additional key operation may be required under some conditions)
Interruption during testing is possible.

Modem

Various information can be communicated via telephone lines.

Test dilution

Dilution factor: 5 to 100
Dilution fluid: Water
Execution in normal analysis mode is possible.
Applicable samples: Serum, urine, one other type

Safety

With collision detection stop function for sample, reagent crane

Reliability

Clogging detection for sample dispensing

■ Sampling Section

Sample set method

Rack section

General sample, emergency sample, standard solution, accuracy control

Turntable section

Standard solution, accuracy control, STAT, reagent blank, detergent, ISE standard solution, ISE detergent

Sample cups

Used cup	Rack	STAT	
		Outer circumference	Inner circumference
Commercial conical (MD0779)			
Cup for minute samples (Hitachi No. 707-0313)			
Hitachi cup (Hitachi No. 716-0425)			
Commercial blood collection tube • Inner diameter: ø 9 to ø 15 • Outer diameter: ø 11.5 to ø 16 • Length: 55 to 100			*
ACA cup			

*Only outer diameter 12 mm.

Note: The max. outer diameter of blood collection tubes shall be less than 17.5 mm.

Dead volume

Used cup	Dead volume
Cup for minute samples	30 µl
Commercial conical cup, Hitachi cup	50 µl
Commercial blood collection tube ø 12 mm	200 µl
Commercial blood collection tube ø 15 mm, ACA cup	250 µl

Sample mounting quantity

Rack section: Max. 150 samples simultaneously

Turntable section: Max. 22 samples + 7 detergents simultaneously

STAT samples

Interrupt analysis possible with turntable or red rack

Setting of blood collection tubes is possible.

Bar code reading is possible.

Sampling mechanism

Micro syringe method
Probe with liquid level detection function (made of metal)
Washing of inside and outside of the probe
Function for detection of clogging in the probe
Probe crash detection stop function

Sample quantity setting range

1. At the time of general dispensing
   2 to 50 µl/test
   Setting possible in units of 0.5 µl
   Setting of 1, 1.5 µl possible only at the time of rerun
2. At the time of water extrusion dispensing
   2 to 50 µl/test
   Setting possible in units of 0.5 µl
   Setting of 1, 1.5 µl possible only at the time of rerun
   The upper limit for the total dispensing quantity (sample + extrusion water) is 35 µl.
   The extrusion water is fixed to 10 µl.

Sample deterioration prevention

Sampler cover provided
Refrigeration function for the turntable

* Protection from thickening, deterioration, and dust

Sample identification

Identification by bar code (bar code reader as standard equipment)

Bar code types

NW7, CODE39, CODE128, ISBT-CODE128, 2-of-5 interleaved, 2-of-5 standard
However, specification of the number of digits for 2-of-5 and mixed reading are possible.

Number of bar code digits

Max. 22 digits, including start, stop, and check characters

Object samples

General samples, emergency samples, STAT samples

Sample type identification

1. Identification of general samples, emergency samples, accuracy control, and standard solution
   Identification by rack type and set position on the turntable
2. Identification of serum and urine
   Rack section: Rack No.
   Turntable section: Specified in advance by set position

■ Reaction section

- **Reagent setting method**
  Turntable method
  Equipped with first and second special reagent refrigerator, one each
  Chaining for the same reagent type is possible.
  * Setting is possible only in standby mode.
- **Reagent ID**
  ID by bar code
- **Reagent type**
  General reagent/high concentration reagent
- **Reagent deterioration prevention**
  Refrigeration of all reagents (refrigeration temperature: 4 to 12°C)
  Protection from drying, temperature, light, dust, etc.
- **Reagent dispensing mechanism**
  Micro-syringe method
  With reagent liquid level detection function
  With internal and external probe washing
  With probe impact stop function
- **Reagent dispensing steps**
  Two steps
- **Reagent quantity set range**
  25 to 300 μL (setting is possible in steps of 1 μL)
  R1 + R2 < = 500 μL
- **Reagent bottle setting quantity and capacity**
  ⇒M521
  Reagent setting quantity: R1/48, R2/48
  Reagent bottle capacity: 15, 30, 60 mL

  ⇒M526
  Reagent setting quantity: R1/48, R2/48
  Reagent bottle capacity: 15, 30, 60, 120 mL
- **Reagent dead volume**
  ⇒M521
  30, 60 mL bottle: 1 mL
  15 mL bottle: 350 μL

  ⇒M526
  30, 60 mL bottle: 1 mL or less
  15 mL bottle: 400 μL or less
  120 mL bottle: 2 mL or less
- **Agitation method**
  Rotating agitation method

- Indication of the remaining reagent quantity

  ⇒M521

  Indication of the remaining reagent quantity in the bottle and the number of possible tests for analysis (calculation by countdown after measuring of the initial reagent quantity)

  Memorizing/output of the number of tests per item is possible.

  ⇒M526

  Indication of the remaining reagent quantity in the bottle and the number of possible tests for analysis (selection of real-time calculation or by countdown after measuring of the initial reagent quantity is possible.)

- Reaction cuvette

  Square glass cuvette, length of the light path: 6 mm

  * Washing and repeated use

- Temperature control for the incubation bath

  Dry bath method

  Reaction temperature: 37°C (detected liquid temperature accuracy: ± 0.3°C)

- Temperature indication

  CRT indication for reaction tank and reagent refrigerator temperature

- Reaction line

  Rotating disk method

- Reagent contamination prevention

  1. Detergent washing for cuvettes and mixing rods
  2. Automatic change of the analysis sequence by item combination
  3. Automatic addition of washings

■ Measuring Section

Optic system method

Post spectroscopy (polychromator method)
Detector layout corresponding to each wavelength

Measuring range

13 wavelengths (340 to 800 nm)
340/380/410/450/480/520/540/570/600/660/700/750/800 nm

Light source

Halogen lamp, 12 V/20 W

* Used at 11.6 V

Diffraction method

Use of a dispersion element concave diffraction grating

Photometry container

Reaction cell made of glass, light path length: 6 mm

Liquid quantity required for photometry

150 µl

Detector

One silicon photodiode array (type with built-in preamplifier)

Number of measured wavelengths

1 or 2 wavelengths per item

Measurement optical density range

OD 0 to 2.5 Abs (converted to an optical path length of 10 mm)

Measuring interval

18 seconds

Measuring resolution

OD 0.0001 Abs

■ Calculation section

- Calibration

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1. Calibration line types
   Straight line, polygonal line, approximating curve, spline function
2. Calibration line setting method

(1) Standard liquid, control serum
   Max. 80 types can be used.
   Max. 7 types per item

(2) Manual input
   Max. 7 points

3. For a multipoint calibration line, one point can be corrected.
4. Recalibration is possible as desired.
5. A function for automatic calibration is provided.

* Correction of one point of a multicalibration line is possible.

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1. Calibration line types: Straight line, polygonal line, approximating curve, spline function
2. Calibration line setting method

(1) Standard liquid, control serum
   Max. 7 types per item
   Max. 200 types can be used.

3. Correction of one point of a multicalibration line is possible.
4. Recalibration is possible as desired.
5. A function for batch correction of multiple reagent lots is provided.

- Correction

1. Blank correction
   Reagent blanks and specimen blanks
2. Data correction
   Correlation correction (Y = AX + B)
   Sample quantity correction at the time of a rerun
3. Volume correction by sample quantity change at the time of rerun and predilution analysis

- Calculations between items

Max	10 types can be set
Max	items of analysis data per type can be used for optionally set calculations using the four basic calculation methods.

- Accuracy control

1. Control serum
   Max. 60 types can be used. (Max. 6 types per item)
2. Processing contents
   X control, X-R control (J-L method), multirule (W. G method), twin plot
3. Indication
   CRT display and printout of control diagrams is possible.
4. Display and output of QC day-to-day data is possible.
5. Automatic execution function for QC

* Alarm output at the time of trouble is possible by setting a judgment level for the accuracy control specimens.

X: Variations within a day, X-R: Day-to-day variations

Online input/output

RS232C, 1 system

Data input

Manual data input is possible (by sample/by item).
Input method for item selection

(1) Keyboard/mouse
(2) Online
(3) Touch screen (option)

Data output and list output

1. Data output

Monitor data during analysis
Various control data

2. List output

Data list, work list, alarm list

Data recording

Hard disk
Floppy disk (3.5 inch)

Statistical calculations

Correlation coefficient between two items, regression formula
X, SD, CV, R calculation by item
Reagent consumption control

Data retrieval

Retrieval possible with patient name, patient ID No., doctor name, or hospital ward as the keyword

Reaction monitor

CRT display is possible when specified during analysis operation.
Printer printing is possible.
The data for 10,000 tests can be recorded.

Data check

Normal value range (7 types can be set), dynamic range, panic value, reaction linearity, reaction solution optical density range, reagent optical density range, rerun range, antigen excess, check between items

* Comparison is made with the set value and an abnormal value symbol is added as required.

Alarm, notification

1. Types

   Operation error, analyzer mechanical error, data processor hardware error, abnormal data, maintenance information

2. Level

   Notification, analysis interruption, analysis stop, system shutdown

3. Display

   Comment display on the CRT, alarm sound generation

4. Treatment

   The treatment method can be confirmed.

Diagnosis function

1. Operation confirmation and functionality confirmation possible by DIAG menu selection
2. Transmission and reception of equipment information possible by communication function

Password

Access to specific menus can be password-protected.

■ Installation conditions

- Power supply
  1. Power Supply Voltage
     AC 100, 110, 200, 210, 220, 230, 240 V (within ± 10%)
  2. Frequency
     50, 60 Hz (within ± 1 Hz)
  3. Max. rated power consumption
     4 kVA
  4. Standard power supply voltage

Domestic:	100 V, 200 V
USA:	210 V
Europe:	230 V
Asia:	110 V, 220 V
Australia:	240 V

- Water supply

  ⇒M521

  Automatic water supply by connection with the deionizer
  Mean used water quantity (50/60 Hz): 40 L/h
  Max. momentary water use quantity (50/60 Hz): 2.6 L/min

  ⇒M526

  Automatic water supply by connection with the deionizer
  Mean used water quantity (50/60 Hz): 33 L/h
  Max. momentary water use quantity (50/60 Hz): 1.5 L/min (duration: 10 sec)

- Water discharge

  Sample liquid (concentrated waste water) and washing waste water (diluted waste water) are discharged separately by gravity drop.

- Equipment dimensions and weight

  ANL: 1850 (W) x 800 (D) x 1240 (H), 480 kg
  DPR: (600 (W) x 700 (D) x 1600 (H)), 65 kg
  * The DPR includes rack, personal computer, CRT, and printer.

- Earthing

  Class 3 (earth resistance: 100 Ω or less)

Use environment

1. Temperature
   18 to 32°C, fluctuations during measuring within ± 2°C.
2. Humidity
   40 to 80%. However, no condensation.
3. Deionized water conductivity
   2.0 µS/cm or less
4. Deionized water temperature
   5 to 28°C

* Equipment heat generation: About 10080000 J/h

Installation environment

1. Temperature
   5 to 40°C
2. Humidity
   40 to 80% RH However, no condensation.

■ Special Accessories (optional)

Electrolyte measuring equipment

1. Items
   Na/ K/ Cl
2. Processing capacity
   Na/ K/ Cl: 200 samples/h

Forced waste water unit

1. Discharge capacity
   50 Hz: 58 l/h
   60 Hz: 70 l/h
2. Head
   1.5 m

Touch screen

Information input from the CRT screen (correspondence to the general menu)

Optional printer

LA connection kit

Modification kit for connection to OLA

■ Product units

⇒521

Part No.	Model name	Destination	Voltage (V)
MU5435	AU641-01	Japan	100
MU5436	AU642-01		200
MU5437	AU641-02	USA	210
MU5438	AU641-03	Europe	230
MU5439	AU641-04	Asia	110
MU5440	AU642-04		220
MU5441	AU641-06	Australia	240

⇒M526

Part No.	Model name	Destination	Voltage (V)
MU6496	AU643-01	Japan	100
MU6497	AU644-01		200
MU6498	AU643-02	USA	210
MU6499	AU643-03	Europe	230
MU6500	AU643-04	Asia	110
MU6501	AU644-04		220
MU6502	AU643-06	Australia	240

Configura-tion unit	Unit No.	Unit name	Japan 100V	Japan 200V	US	Europe	Remarks
			MU5435 AU641-01	MU5436 AU642-01	MU5437 AU641-02	MU5438 AU641-03	
Main Body	MU5442	M521-ANL11	1	1		1	Analyzer Main body
	MU5443	M521-ANL21			1		
	MU3171	M520-JC01	1				Power supply input
	MU3172	M520-JC11		1			
	MU3173	M520-JC21			1		
	MU3174	M520-JC31				1	
	MU5467	M521-JD01	1	1			Power supply control
	MU5468	M521-JD11			1		
	MU5469	M521-JD21				1	
	MU3180	M520-JE01	1				Cable set (Power cable)
	MU3181	M520-JE11		1			
	MU3528	R tray	1	1	1	1	
	MD1252	Plate	4	4	4	4	Floor plate
	ME6550	Label	1	1			
	ME6551	Label			1	1	
	MU3529	Label kit	1	1			
	MU5505	Label kit			1		
	MU5506	Label kit				1	
	ME5869	Label	1	1			EMC label

Configura-tion unit	Unit No.	Unit name	Japan 100V	Japan 200V	US	Europe	Remarks
			MU5435 AU641-01	MU5436 AU642-01	MU5437 AU641-02	MU5438 AU641-03	
Standard Accessor-ies	MU5472	M521-ACC11	1	1			
	MU5473	M521-ACC21			1		
	MU5474	M521-ACC31				1	
Starting kit	MU4967	M514-TRN11	1	1			
Packaging material	MU5481	M521-DPC11	1	1	1	1	For inside
	MU5482	M521-EPC11			1	1	For outside
Spare Consumab le Parts	MU5477	M521-CSS11	(1)	(1)			
	MU5478	M521-CSS21			(1)		
	MU5479	M521-CSS31				(1)	
Repair parts	MU5484	M521-REP11	(1)	(1)			
	MU5485	M521-REP21			(1)	(1)	
Options	MU5486	M521-OPA01	(1)	(1)			ISE
	MU5487	M521-OPA02			(1)		ISE
	MU5488	M521-OPA03				(1)	ISE
	MU4702	M520-OPH02			(2)		Forced drainage-eq
	MU4148	M520-OPH01				2	Forced drainage-eq
	MU3351	M240-OPH03	(2)	(2)			Forced drainage-eq
	MU2535	M240-OPD01	(1)	(1)			Forced drainage-eq
	MU0815	M250-OPE01	(1)	(1)			Water supply Equipment
	MU4146	M520-OPE01			(1)		Water supply Equipment
	MU4147	M520-OPE02				(1)	Water supply Equipment
	MU5490	M521-OPC01	(1)	(1)			Option printer
	MU5007	M514-OPZ01	1	1			PC set
	MU5464	AU640-OPF01	(1)	(1)			Touch screen

Configura-tion unit	Unit No.	Unit name	Asia 110V	Asia 220V	Austra-lia		Remarks
			MU5439 AU641-04	MU5440 AU642-04	MU5441 AU641-06		
Main body	MU5443	M521-ANL21	1	1	1		Analyzer Main body
	MU3175	M520-JC41	1				Power supply input
	MU3176	M520-JC51		1			
	MU3665	M520-JC61			1		
	MU5467	M521-JD01	1				Power supply control
	MU5470	M521-JD31			1		
	MU5471	M521-JD41		1			
	MU3180	M520-JE01	1				Cable set (Power cable)
	MU3181	M520-JE11		1	1		
	MD1252	Plate	4	4	4		Floor plate
	ME7192	Label	1	1	1		English

Configura-tion unit	Unit No.	Unit name	Asia 110V	Asia 220V	Austra-lia		Remarks
			MU5439 AU641-04	MU5440 AU642-04	MU5441 AU641-06		
Standard Accessor-ies	MU5475	M521-ACC41	1	1	1		
Packaging material	MU5481	M521-DPC11	1	1	1		For Inside
	MU5482	M521-EPC11	1	1	1		For Outside
Spare Consumab le Parts	MU5480	M521-CSS41	(1)	(1)	(1)		
Repair parts	MU5485	M521-REP21	(1)	(1)	(1)		
Options	MU5489	M521-OPA04	(1)	(1)	(1)		ISE
	MU1853	M240-OPH01	(2)	(2)	(2)		Forced drainage-eq
	MU2535	M240-OPD01	(1)	(1)	(1)		Water supply Equipment

No.	Name	MU5442 M521-ANL11	MU5443 M521-ANL21	Remarks
			OAI/ Asia	
MU5444	M521-AA01	1	1	Main Body
MU5445	M521-CA01	1	1	Rack feed
MU5446	M521-CB01	1	1	Rack transfer
MU5447	M521-CC01	1	1	Rack Buffer
MU5448	M521-CD01	1	1	Repeat run line
MU5449	M521-CE01	1	1	Rack push out
MU5450	M521-CH01	1	1	Rack storage
MU5460	M521-DA01	1	1	R1 refrigerator
MU5461	M521-DA11	1	1	R2 refrigerator
MU5451	M521-DB01	1	1	Cooling unit
MU5452	M521-DC01	1	1	Cooling sampler(R)
MU5453	M521-DD01	1	1	Cooling unit (S)
MU4663	M520-EC02	1	1	Wash unit
MU5455	M521-FA01	1	1	S Probe transfer
MU3164	M520-FB01	1	1	Cuvette wash
MU3165	M520-FC01	1	1	R1/S Mix unit
MU3367	M520-FC11	1	1	R2 Mix unit
MU5456	M521-FD01	1	1	R1 probe transfer
MU5457	M521-FD11	1	1	R2 probe transfer
MU5458	M521-GA01	1		Incubation bath
MU5459	M521-GA11		1	Incubation bath for OAI
MU5018	M514-HA01	1	1	Degasser
MU3545	M014-BA02	2	2	Perister pump
ME2357	S probe	1	1	
ME2185	R probe	2	2	
MD7411	Mix bar	9	9	
MU9888	Lamp	1	1	
MU2465	M510-SA01	3	3	Dispenser
	M504-EM01	3	3	Syringe case
	M504-EH01	1	1	S syringe
	M504-EJ01	3	3	R syringe
	ACA6-SYERD	2	2	E syringe
GB3018	Packing	2	2	Packing for E syringe

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Component unit	Company-internal symbol	Product name	Domestic 100 V MU6496 AU643-01	Domestic 200 V MU6497 AU644-01	USA MU6498 AU643-02	Europe MU6499 AU643-03	Remarks
Body composition	MU6503	M526-ANL11	1	1		1	Analyzer body
	MU6504	M526-ANL21			1		Power supply input
	MU6511	M526-JC01	1				
	MU3172	M520-JC11		1			Power supply control
	MU3173	M520-JC21			1		
	MU3174	M520-JC31				1	
	MU5467	M521-JD01	1	1			
	MU5468	M521-JD11			1		Power supply cable
	MU5469	M521-JD21				1	
	MU3180	M520-JE01	1				
	MU3181	M520-JE11		1			e-version
	MU5802	R-tray	2	2	2	2	
	ME6347	Cover F	1	1		1	
	MF0303	Cover Fe			1		
	MD1252	Floor plate	4	4	4	4	Floor plate for installation
	ME4935	Rating nameplate	1	1			
	MF0308	Rating nameplate			1		e-version
	ME7192	Rating nameplate				1	
	MU6536	Nameplate set	1	1	1	1	Caution plates
	ME5869	Nameplate	1	1			EMC mark
	MD4705	CSA nameplate			1		CSA mark
	MA7764	Nameplate			1		FCC label
	ME9429	Nameplate				1	CE mark

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Component unit	Company-internal symbol	Product name	Domestic 100 V MU6496 AU643-01	Domestic 200 V MU6497 AU644-01	USA MU6498 AU643-02	Europe MU6499 AU643-03	Remarks
Standard accessories	MU6513	M526-ACC11	1	1			
	MU6514	M526-ACC21			1		
	MU6515	M526-ACC31				1	
Inspection set	MU4967	M514-TRN11	1	1			
Packaging materials	MU5481	M521-DPC11	1	1	1	1	Internal packaging materials
	MU5482	M521-EPC11			1	1	External packaging materials
Wear and spare parts	MU6517	M526-CSS11	(1)	(1)			
	MU6518	M526-CSS21			(1)		
	MU6519	M526-CSS31				(1)	
Repair parts	MU6521	M526-REP11	(1)	(1)			
	MU6522	M526-REP21			(1)	(1)	
Special accessories	MU6523	M526-OPA01	(1)	(1)			Electrolyte measuring equipment
	MU5487	AU640-OPA02			(1)		Electrolyte measuring equipment
	MU5488	AU640-OPA03				(1)	Electrolyte measuring equipment
	MU4702	M520-OPH02			(2)		Forced water discharge equipment
	MU4148	M520-OPH01				2	Forced water discharge equipment
	MU3351	M240-OPH03	(2)	(2)			Forced water discharge equipment
	MU2535	M240-OPD01	(1)	(1)			Water supply equipment
	MU0815	M250-OPE01	(1)	(1)			Water supply equipment
	MU4146	M520-OPE01			(1)		Water supply equipment
	MU4147	M520-OPE02				(1)	Water supply equipment

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Component unit	Company-internal symbol	Product name	Domestic 100 V MU6496 AU643-01	Domestic 200 V MU6497 AU644-01	USA MU6498 AU643-02	Europe MU6499 AU643-03	Remarks
Special accessories	MU5490	M521-OPC01	(1)	(1)			Additional printer
	MU5464	AU640-OPF01	(1)	(1)			Touch screen
	MU6469	M521-OPZ02	(1)	(1)			PC set
	MU6470	M521-OPZ12	(1)	(1)			PC + touch set
	MU6472	M521-OPZ13	(1)	(1)			PC + touch + additional PR set
	MU6473	M521-OPY01	(1)	(1)			Large PC + modem
	MU5465	M521-OPG01				(1)	Inpeco connection
	MU6538	M526-OPE01	(1)	(1)			Detergent addition Factory option

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Component unit	Company-internal symbol	Product name	Domestic 100 V MU6496 AU643-01	Domestic 200 V MU6497 AU644-01	USA MU6498 AU643-02	Europe MU6499 AU643-03	Remarks
Standard accessories	MU6513	M526-ACC11	1	1			
	MU6514	M526-ACC21			1		
	MU6515	M526-ACC31				1	
Inspection set	MU4967	M514-TRN11	1	1			
Packaging materials	MU5481	M521-DPC11	1	1	1	1	Internal packaging materials
	MU5482	M521-EPC11			1	1	External packaging materials
Wear and spare parts	MU6517	M526-CSS11	(1)	(1)			
	MU6518	M526-CSS21			(1)		
	MU6519	M526-CSS31				(1)	
Repair parts	MU6521	M526-REP11	(1)	(1)			
	MU6522	M526-REP21			(1)	(1)	
Special accessories	MU6523	M526-OPA01	(1)	(1)			Electrolyte measuring equipment
	MU5487	AU640-OPA02			(1)		Electrolyte measuring equipment
	MU5488	AU640-OPA03				(1)	Electrolyte measuring equipment
	MU4702	M520-OPH02			(2)		Forced water discharge equipment
	MU4148	M520-OPH01				2	Forced water discharge equipment
	MU3351	M240-OPH03	(2)	(2)			Forced water discharge equipment
	MU2535	M240-OPD01	(1)	(1)			Water supply equipment
	MU0815	M250-OPE01	(1)	(1)			Water supply equipment
	MU4146	M520-OPE01			(1)		Water supply equipment
	MU4147	M520-OPE02				(1)	Water supply equipment

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Component unit	Company-internal symbol	Product name	Domestic 100 V MU6496 AU643-01	Domestic 200 V MU6497 AU644-01	USA MU6498 AU643-02	Europe MU6499 AU643-03	Remarks
Special accessories	MU5490	M521-OPC01	(1)	(1)			Additional printer
	MU5464	AU640-OPF01	(1)	(1)			Touch screen
	MU6469	M521-OPZ02	(1)	(1)			PC set
	MU6470	M521-OPZ12	(1)	(1)			PC + touch set
	MU6472	M521-OPZ13	(1)	(1)			PC + touch + additional PR set
	MU6473	M521-OPY01	(1)	(1)			Large PC + modem
	MU5465	M521-OPG01				(1)	Inpeco connection
	MU6538	M526-OPE01	(1)	(1)			Detergent addition Factory option

Component unit	Company-internal symbol	Product name	General 110 V MU6500 AU643-04	General 220 V MU6501 AU644-04	Australia MU6502 AU643-06		Remarks
Body composition	MU6504	M526-ANL21	1	1	1		Analyzer body
	MU6512	M526-JC41	1				Power supply input
	MU3176	M520-JC51		1			
	MU3665	M520-JC61			1		
	MU5467	M514-JD01	1				Power supply control
	MU5470	M514-JD31			1		
	MU5471	M514-JD41		1			
	MU3180	M520-JE01	1				Power supply cable
	MU3181	M520-JE11		1	1		
	MD1252	Floor plate	4	4	4		Floor plate for installation
	ME7192	Rating nameplate	1	1	1		English

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Component unit	Company-internal symbol	Product name	General 110 V MU6500 AU643-04	General 220 V MU6501 AU644-04	Australia MU6502 AU643-06		Remarks
Standard accessories	MU6516	M526-ACC41	1	1	1		
Packaging materials	MU5481	M521-DPC11	1	1	1		Internal packaging materials
	MU5482	M521-EPC11	(1)	(1)	1		External packaging materials
	MU6770	M521-EPC21	(1)	(1)			External packaging materials for China
Wear and spare parts	MU6520	M526-CSS41	(1)	(1)	(1)		
Repair parts	MU6522	M526-REP21	(1)	(1)	(1)		
Special accessories	MU5489	M640-OPA04	(1)	(1)	(1)		Electrolyte measuring
	MU1853	M240-OPH01	(2)	(2)	(2)		Forced water discharge
	MU2535	M240-OPD01	(1)	(1)	(1)		Water supply equipment

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		MU6496	MU6497	MU6498	MU6499	MU6500	MU6501	MU6502	
Name		AU643-01	AU644-01	AU643-02	AU643-03	AU643-04	AU644-04	AU643-06	
	Destination	Do-mes-tic	Do-mes-tic	USA	Europe	Gen-eral (Asia)	Gen-eral (Asia)	Aus-tralia	
	Power supply voltage (V)	100	200	210	230	110	220	240	Remarks
M526-ANL11	M521 analyzer	1	1		1				Correction required with change of the body
M526-ANL21	M521 analyzer			1		1	1	1	Correction required with change of the body
M526-AA01	Body	1	1	1	1	1	1	1	MIX washing tank change, detergent systemization
M526-CA01	Rack feed	1	1	1	1	1	1	1	Feed plate correspondence to the new drawing No.
M521-CB01	Rack feeder	1	1	1	1	1	1	1	
M521-CC01	Rack buffer	1	1	1	1	1	1	1	
M521-CD01	Rerun line	1	1	1	1	1	1	1	
M521-CE01	Rack push-out	1	1	1	1	1	1	1	
M521-CH01	Rack storage	1	1	1	1	1	1	1	
M521-DA01	R1 reagent refrigerator	1	1	1	1	1	1	1	Correspondence to bearing rust countermeasure by drawing correction
M521-DA11	R2 reagent refrigerator	1	1	1	1	1	1	1	Correspondence to bearing rust countermeasure by drawing correction
M521-DB01	Cooling unit								
M521-DC01	Cooling sampler	1	1	1	1	1	1	1	Correspondence to thermistor change by drawing correction
M521-DD01	Cooling unit	1	1	1	1	1	1	1	
M520-EC02	Washing pump	1	1	1	1	1	1	1	
M526-FA01	S-probe feed	1	1	1	1	1	1	1	Change of the liquid level detection circuit board
M520-FB01	Cuvette washing	1	1	1	1	1	1	1	
M520-FC01	R1, S-mixing unit	1	1	1	1	1	1	1	Washing tank not changed because of part A
M520-FC11	R2, S-mixing unit	1	1	1	1	1	1	1	Washing tank not changed because of part A

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		MU6496	MU6497	MU6498	MU6499	MU6500	MU6501	MU6502	
Name		AU643-01	AU644-01	AU643-02	AU643-03	AU643-04	AU644-04	AU643-06	
	Destination	Do-mes-tic	Do-mes-tic	USA	Europe	Gen-eral (Asia)	Gen-eral (Asia)	Aus-tralia	
	Power supply voltage (V)	100	200	210	230	110	220	240	Remarks
M526-FD01	R1 probe feed	1	1	1	1	1	1	1	Change of the liquid level detection circuit board
M526-FD11	R2 probe feed	1	1	1	1	1	1	1	Change of the liquid level detection circuit board
M521-GA01	Incubation bath	1	1		1				
M521-GA11	Incubation bath			1		1	1	1	
M514-HA01	Deaeration unit	1	1	1	1	1	1	1	Correspondence to moulded (deaeration tube) by drawing correction
S-probe		1	1	1	1	1	1	1	
R-probe		2	2	2	2	2	2	2	
Mixing rod		9	9	9	9	9	9	9	
Light source lamp		1	1	1	1	1	1	1	
M510-SA01	Dispenser	3	3	3	3	3	3	3	
M504-EM01	Syringe case	3	3	3	3	3	3	3	
M504-EH01	S-syringe	1	1	1	1	1	1	1	
M504-EJ01	R-syringe	3	3	3	3	3	3	3	
ACA6-SYERD	E-syringe	2	2	2	2	2	2	2	
Packing	Packing for E-syringe	2	2	2	2	2	2	2	
Screw		3	3	3	3	3	3	3	
E-head		2	2	2	2	2	2	2	
R-head		1	1	1	1	1	1	1	
Nameplate		1	1	1	1	1	1	1	
M014-BA02	Perister pump	1	1	1	1	1	1	1	Quantity reduction by detergent systemization

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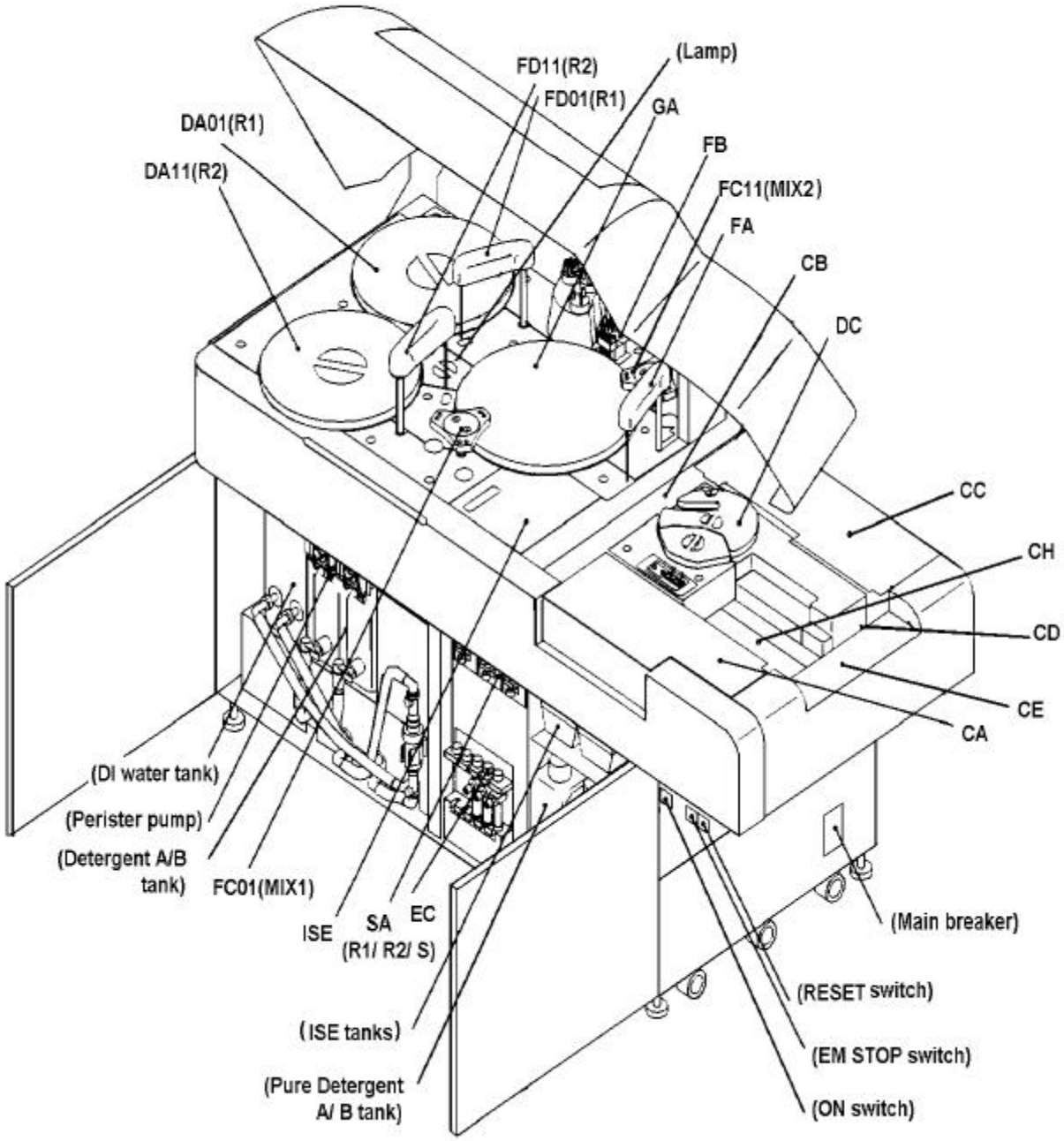
		MU6496	MU6497	MU6498	MU6499	MU6500	MU6501	MU6502	
Name		AU643-01	AU644-01	AU643-02	AU643-03	AU643-04	AU644-04	AU643-06	
	Destination	Do-mes-tic	Do-mes-tic	USA	Europe	Gen-eral (Asia)	Gen-eral (Asia)	Aus-tralia	
	Power supply voltage (V)	100	200	210	230	110	220	240	Remarks
M526-JC01	Power supply input	1							Change from cost reduction of 40 A noise filter
M520-JC11	Power supply input		1						
M520-JC21	Power supply input			1					
M520-JC31	Power supply input				1				
M526-JC41	Power supply input					1			Change from cost reduction of 40 A noise filter
M520-JC51	Power supply input						1		
M520-JC61	Power supply input							1	
M521-JD01	Power supply control	1	1			1			
M521-JD11	Power supply control			1					
M521-JD21	Power supply control				1				
M521-JD31	Power supply control							1	
M521-JD41	Power supply control						1		
M520-JE01	Cable set	1				1			
M520-JE11	Cable set		1				1	1	
Nameplate set	Caution nameplate	1	1	1	1	1	1	1	Unification to European specifications
Nameplate	Standard nameplate	1	1						EMC mark 70 x 20
CSA label	Standard nameplate			1					CSA mark 54 x 20, separated from the nameplate set

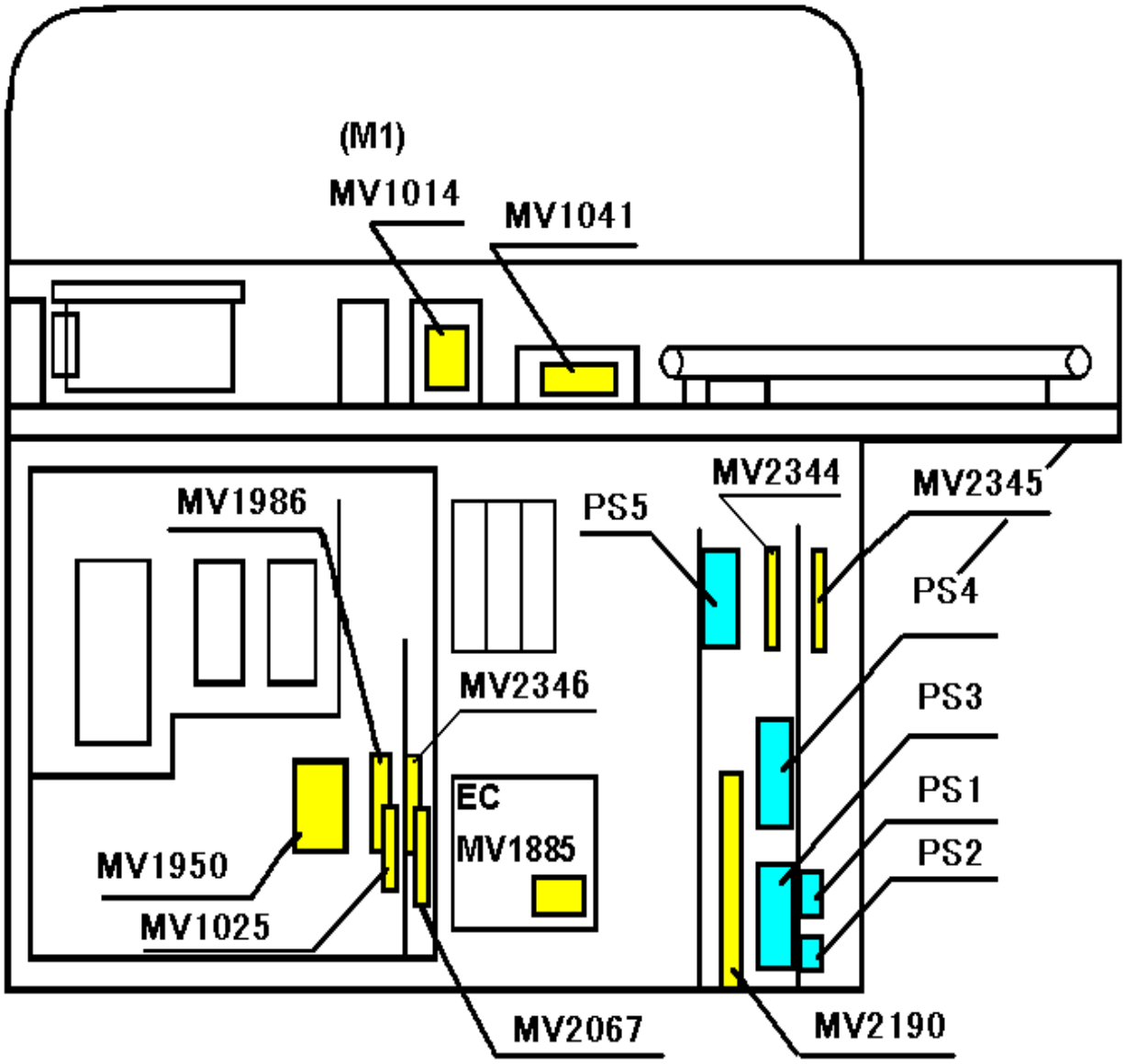
Rev.10

		MU6496	MU6497	MU6498	MU6499	MU6500	MU6501	MU6502	
Name		AU643-01	AU644-01	AU643-02	AU643-03	AU643-04	AU644-04	AU643-06	
	Destination	Do-mes-tic	Do-mes-tic	USA	Europe	Gen-eral (Asia)	Gen-eral (Asia)	Aus-tralia	
	Power supply voltage (V)	100	200	210	230	110	220	240	Remarks
Nameplate	Standard nameplate			1					FCC mark 74 x 27.5, separated from the nameplate set
Nameplate	Standard nameplate				1				CE mark 38 x 28, separated from the nameplate set
Nameplate	Standard nameplate							1	C-Tick mark 70 x 16, separated from the nameplate set
Nameplate	Rating nameplate (Japanese)	1	1						
Nameplate	Rating nameplate (English)			1					e-version newly created, part names also added
Nameplate	Rating nameplate (English)								Part names etc. added
Nameplate	Rating nameplate (Asia, Australia)				1	1	1	1	Common use of items with 50/60 notation also for Europe

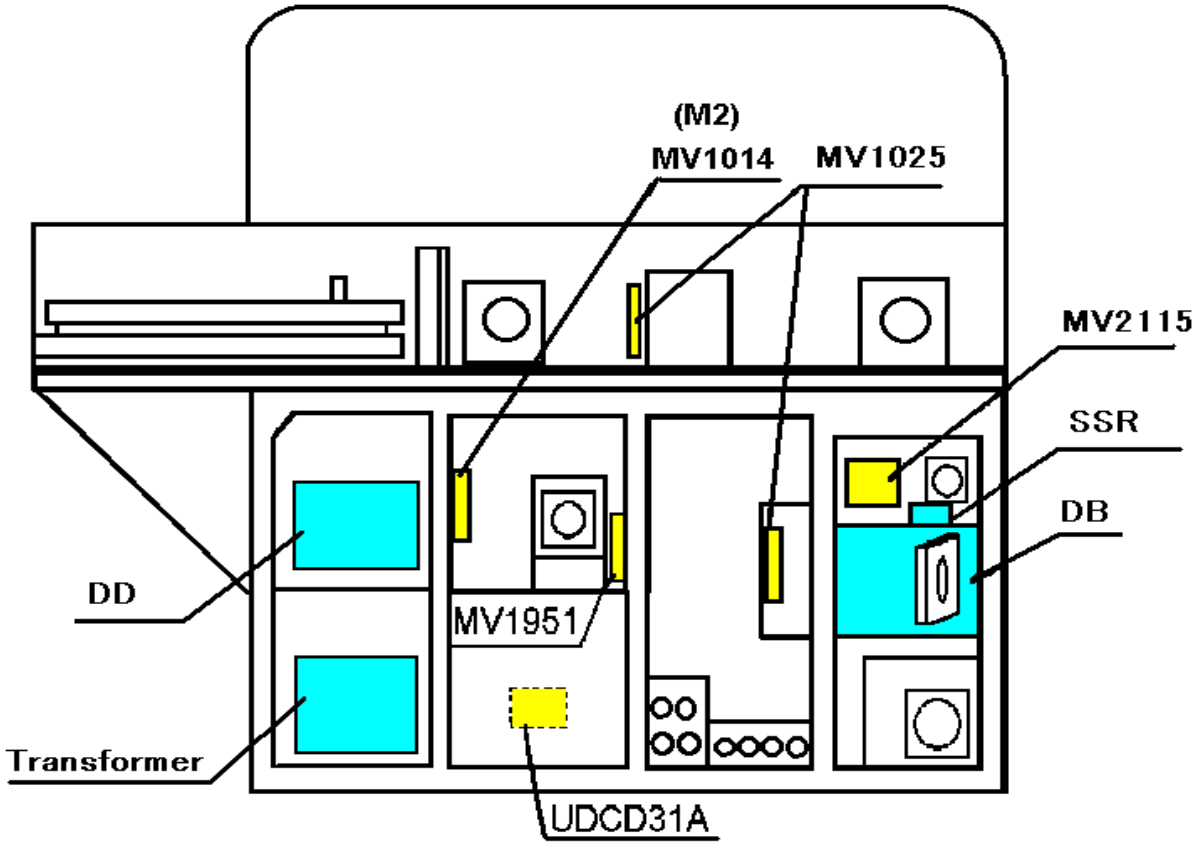
■ Unit Layout


FD11(R2)
(Lamp)
FD01(R1)
GA
DA01(R1)
FB
DA11(R2)
FC11(MIX2)
FA
CB
DC
CC
CH
CD
CE
CA
(DI water tank)
(Perister pump)
(Detergent A/B tank)
FC01(MIX1)
ISE
SA (R1/ R2/ S)
EC
(Main breaker)
(RESET switch)
(ISE tanks)
(EM STOP switch)
(Pure Detergent A/ B tank)
(ON switch)

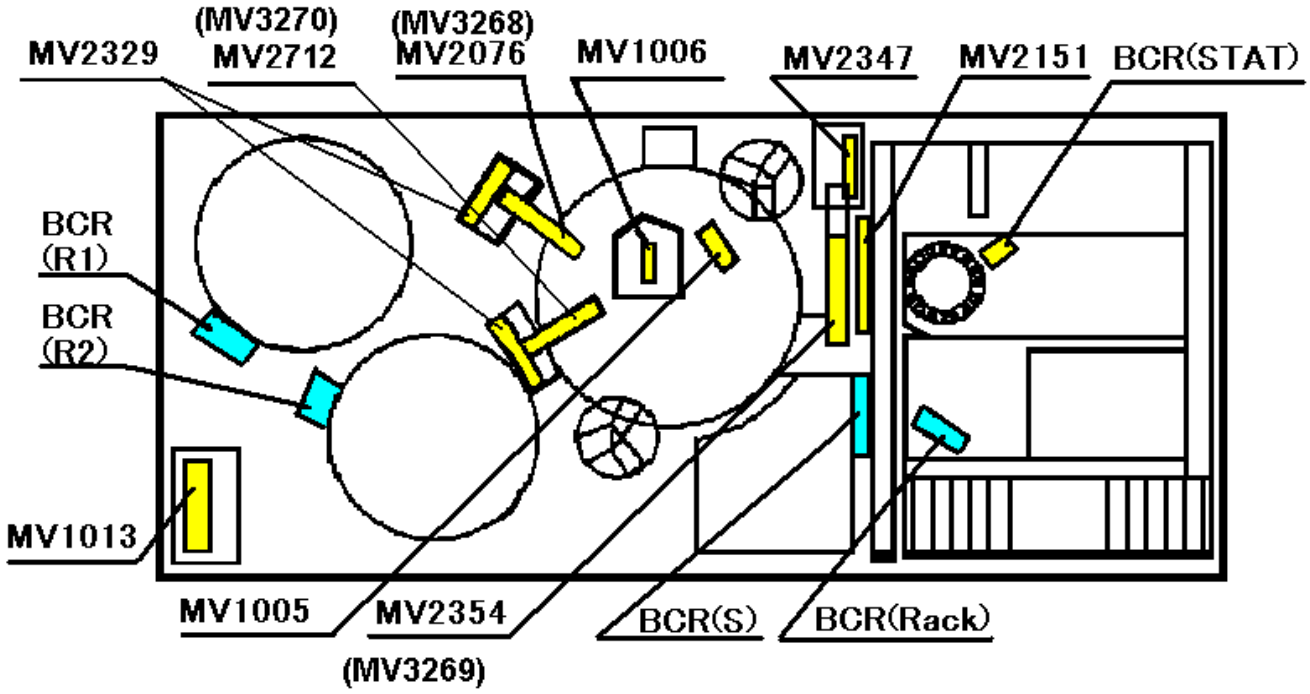
■ Front view


(M1)
MV1014
MV1041
MV1986
MV2344
MV2345
PS5
PS4
MV2346
PS3
PS1
EC
MV1885
PS2
MV1950
MV1025
MV2067
MV2190

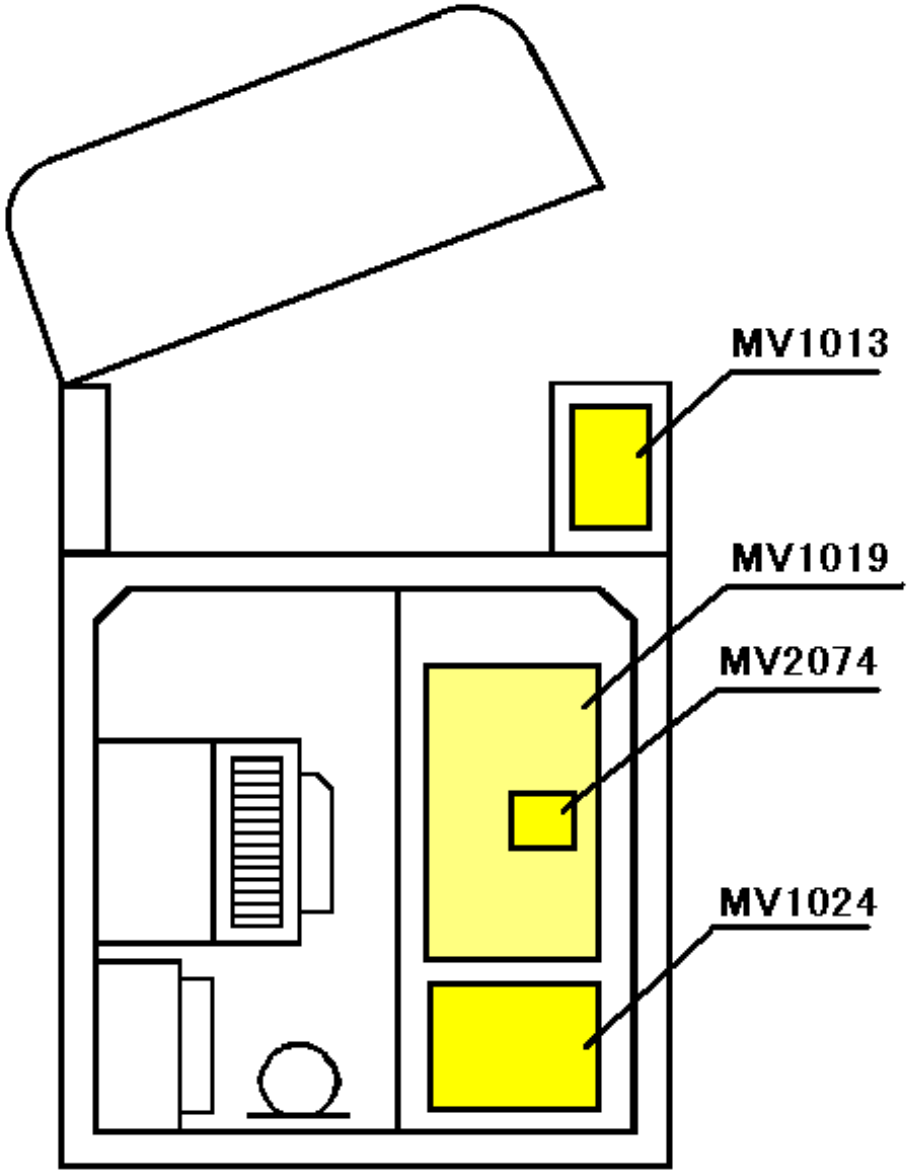
■ Rear view



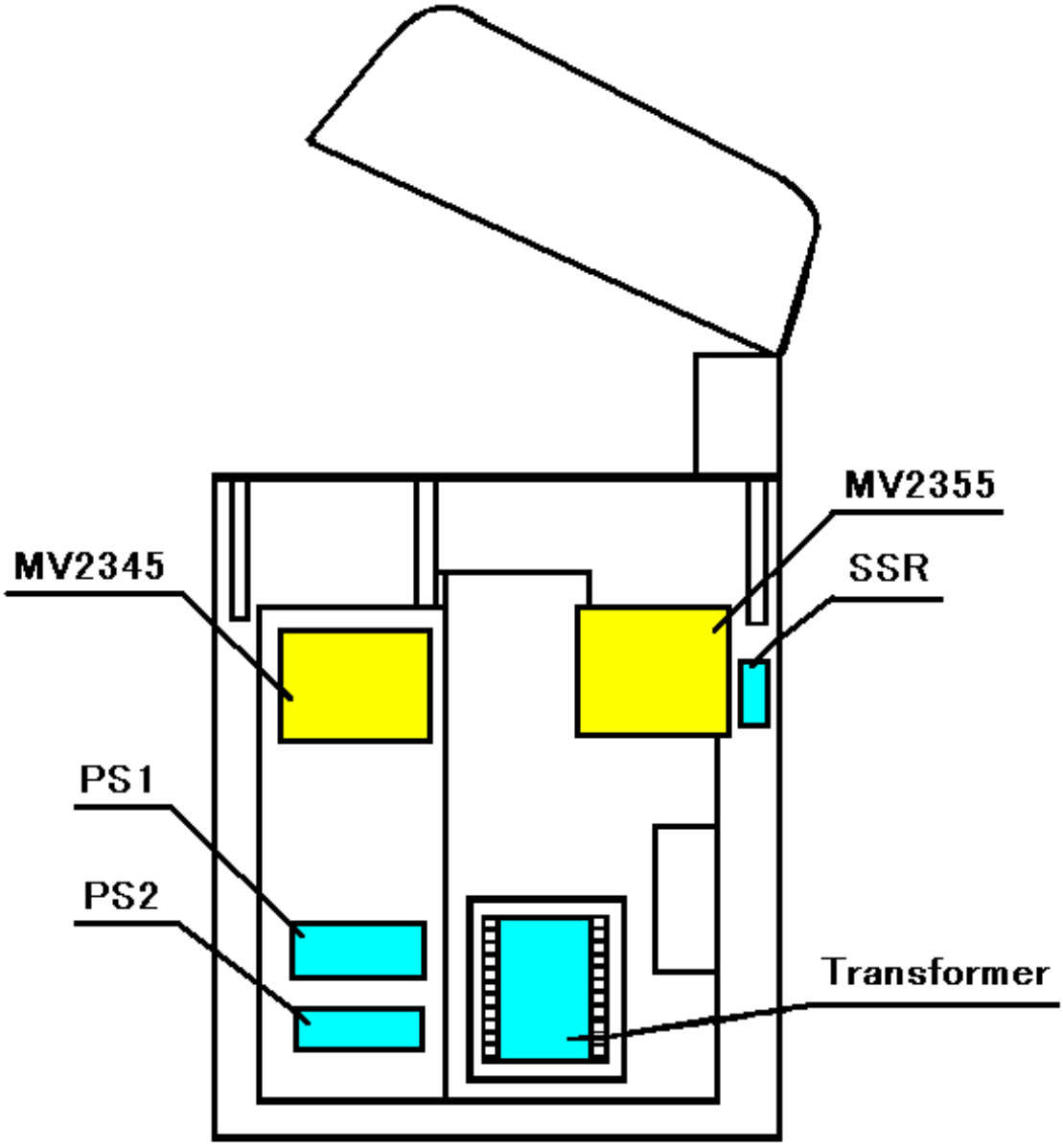
■ Top view (for M526)



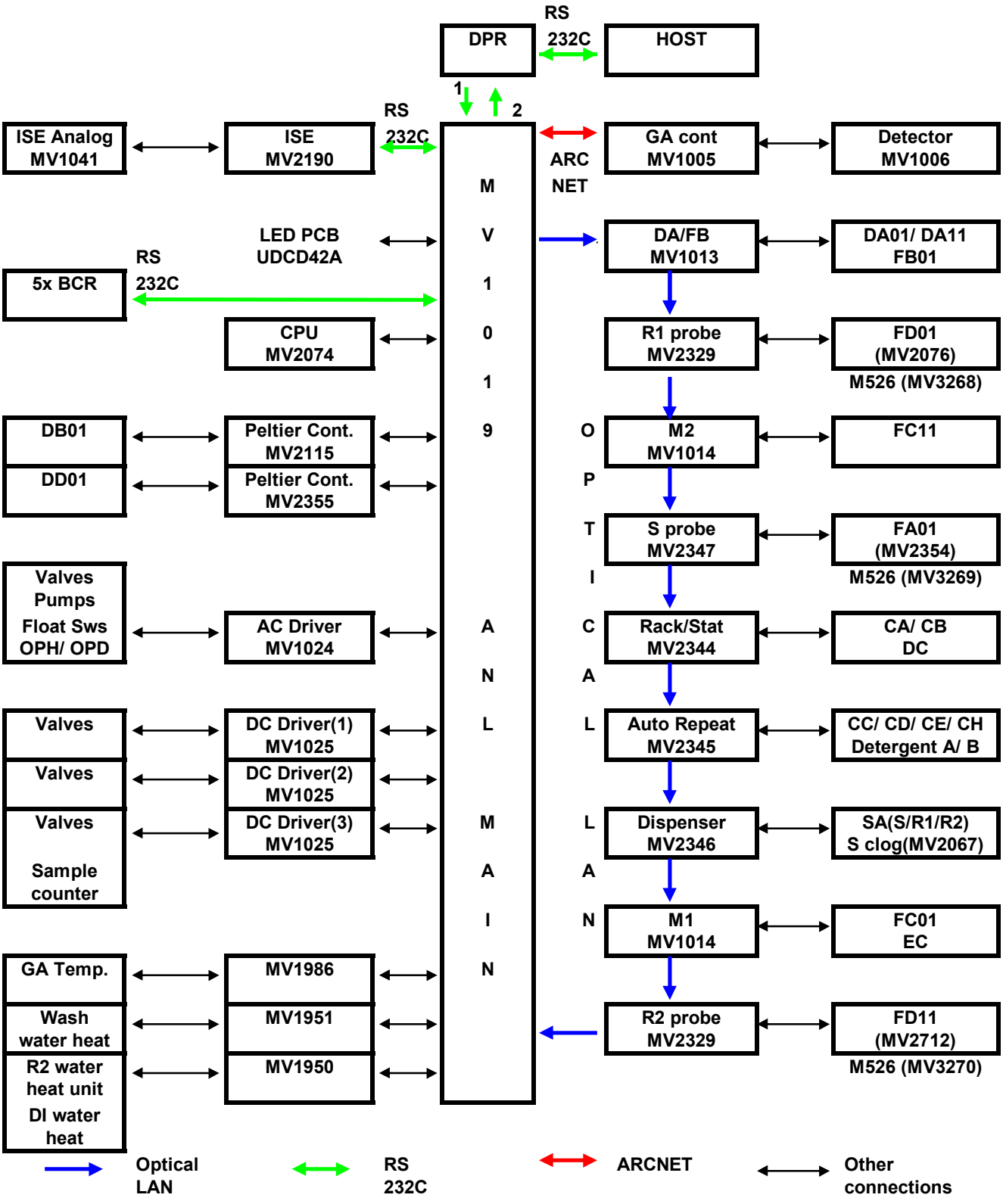
■ Left-side view



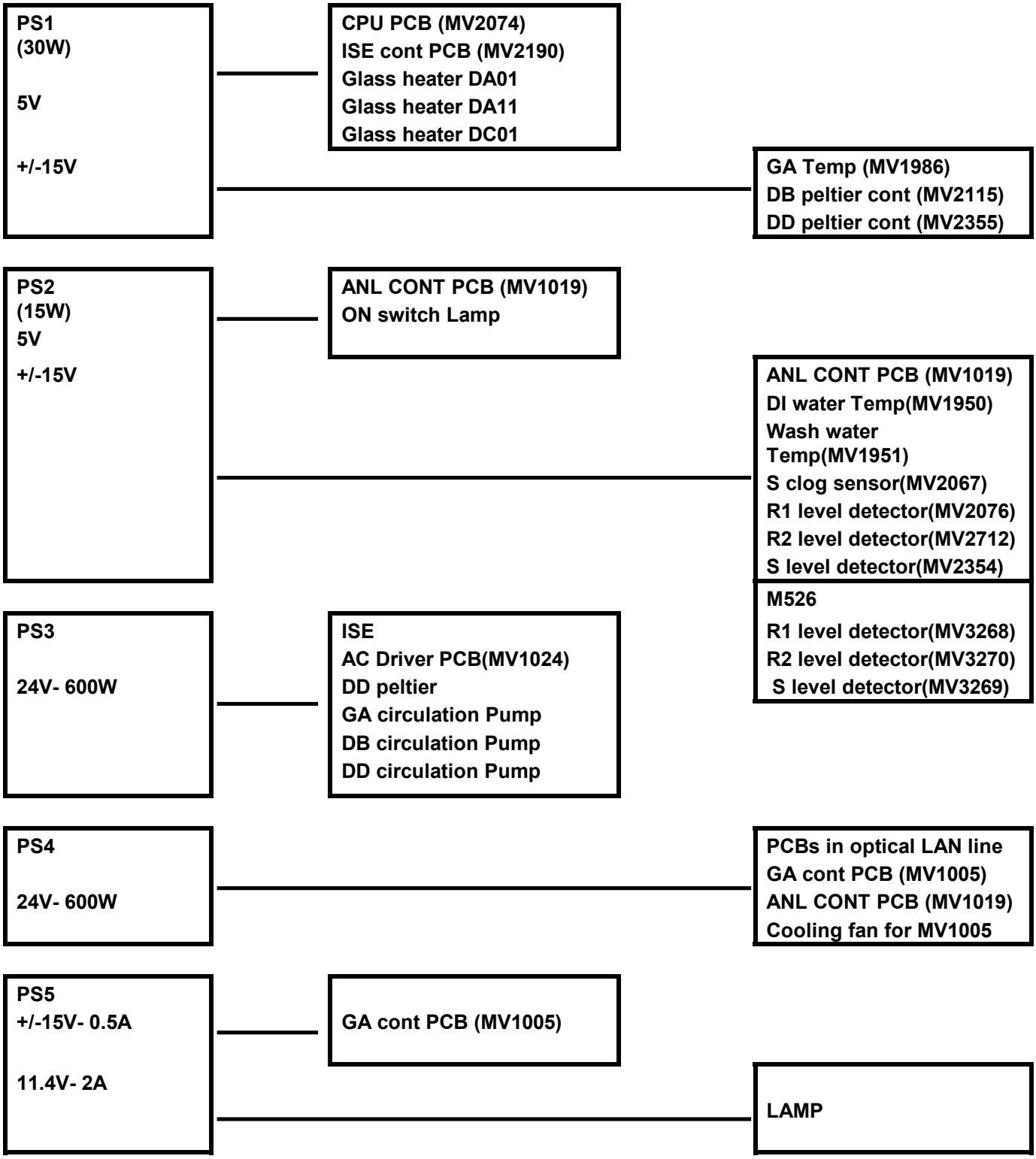
■ Right-side view



■ PCB-Unit

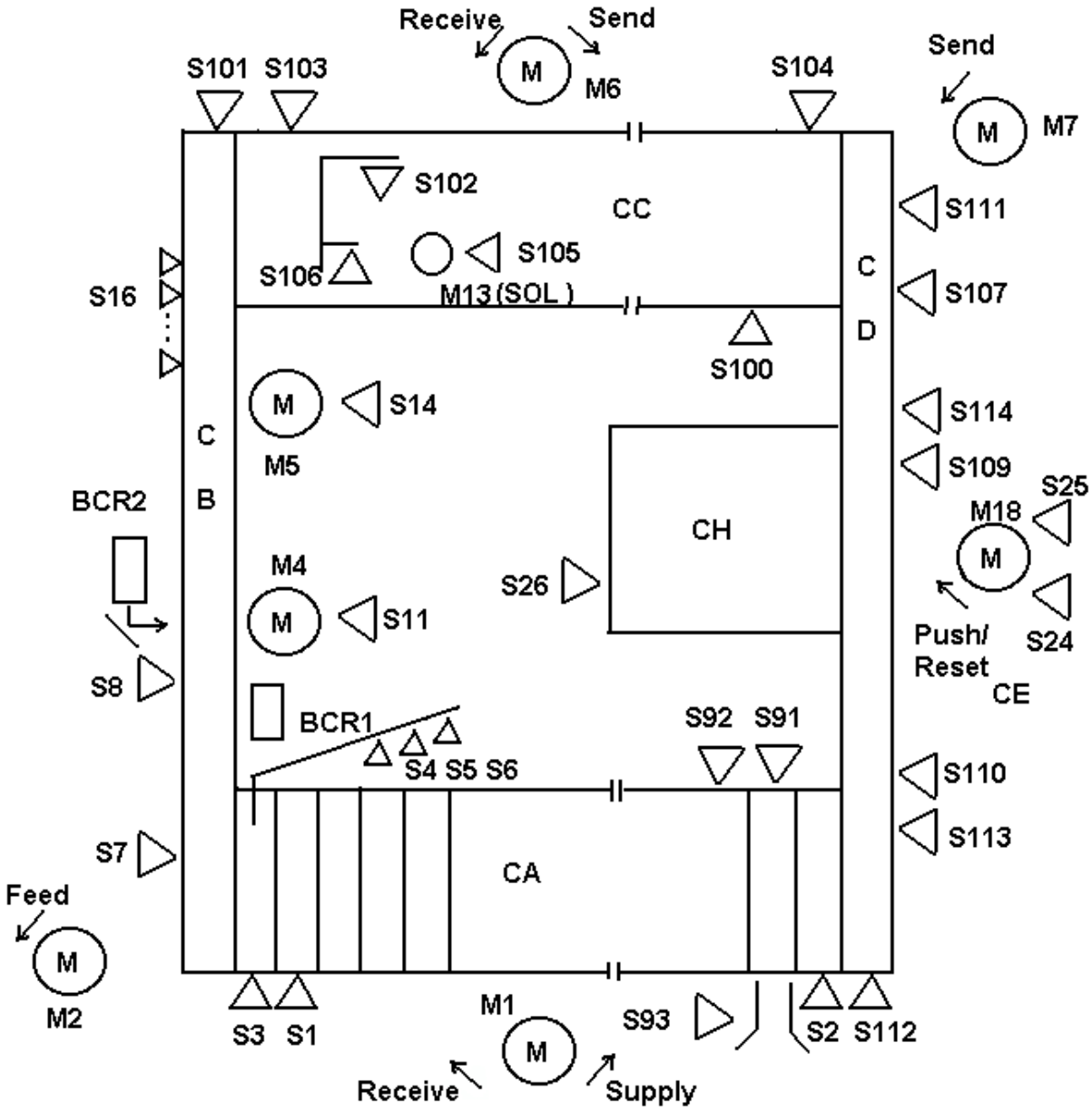

DPR
RS 232C
HOST
1
2
RS 232C
ISE Analog MV1041
ISE MV2190
ARC NET
GA cont MV1005
Detector MV1006
M
V
1
0
1
9
LED PCB UDCD42A
RS 232C
5x BCR
DA/FB MV1013
DA01/ DA11 FB01
CPU MV2074
R1 probe MV2329
FD01 (MV2076)
M526 (MV3268)
DB01
DD01
Peltier Cont. MV2115
Peltier Cont. MV2355
O
P
T
I
M2 MV1014
FC11
S probe MV2347
FA01 (MV2354)
M526 (MV3269)
Valves
Pumps
Float Sws
OPH/ OPD
AC Driver MV1024
A
N
L
C
A
Rack/Stat MV2344
CA/ CB DC
Valves
Valves
Valves
Sample counter
DC Driver(1) MV1025
DC Driver(2) MV1025
DC Driver(3) MV1025
M
A
I
N
L
L
Auto Repeat MV2345
CC/ CD/ CE/ CH Detergent A/ B
Dispenser MV2346
SA(S/R1/R2) S clog(MV2067)
GA Temp.
Wash water heat
R2 water heat unit
DI water heat
MV1986
MV1951
MV1950
L
A
N
M1 MV1014
FC01 EC
R2 probe MV2329
FD11 (MV2712)
M526 (MV3270)
Optical LAN
RS 232C
ARCNET
Other connections

■ Power supply

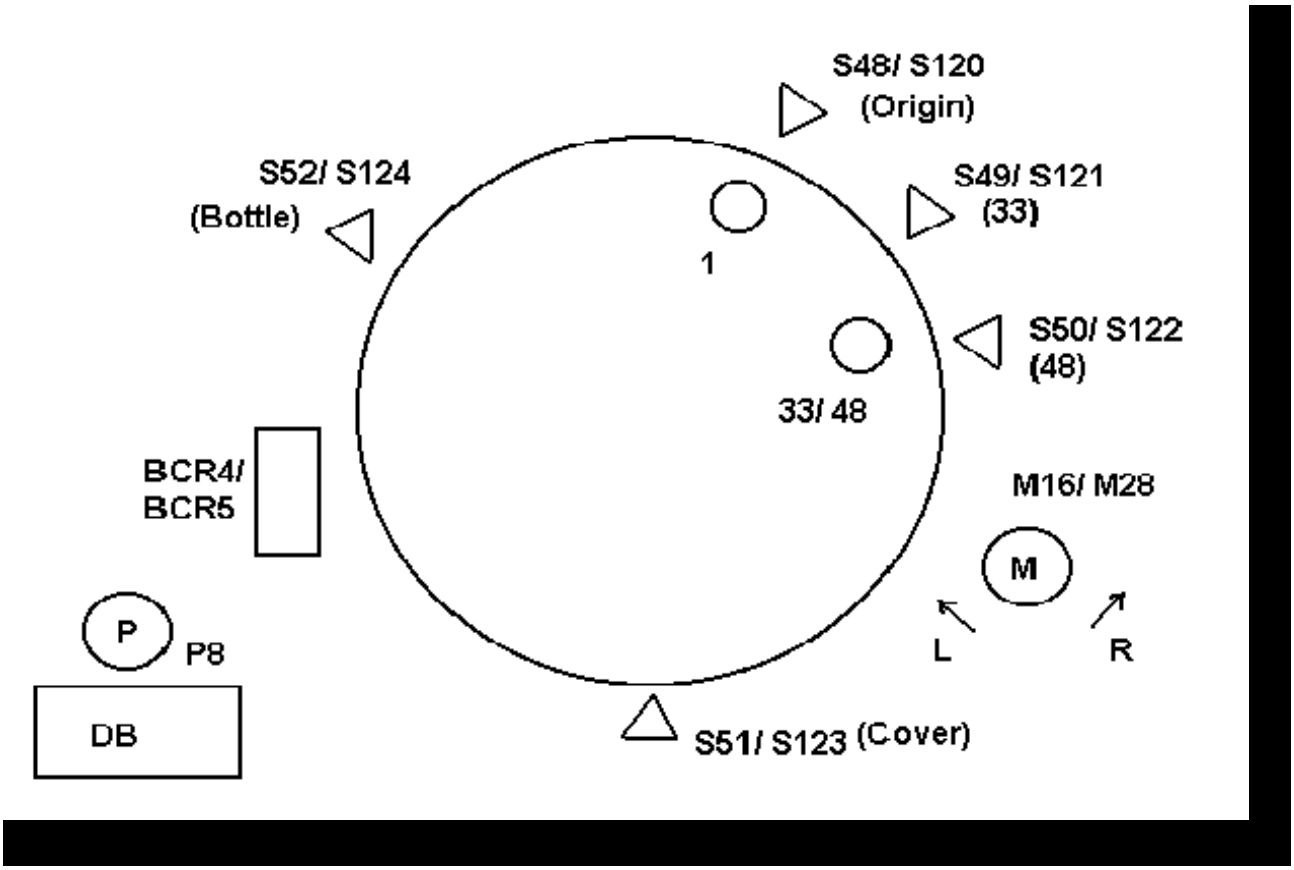


■ Unit

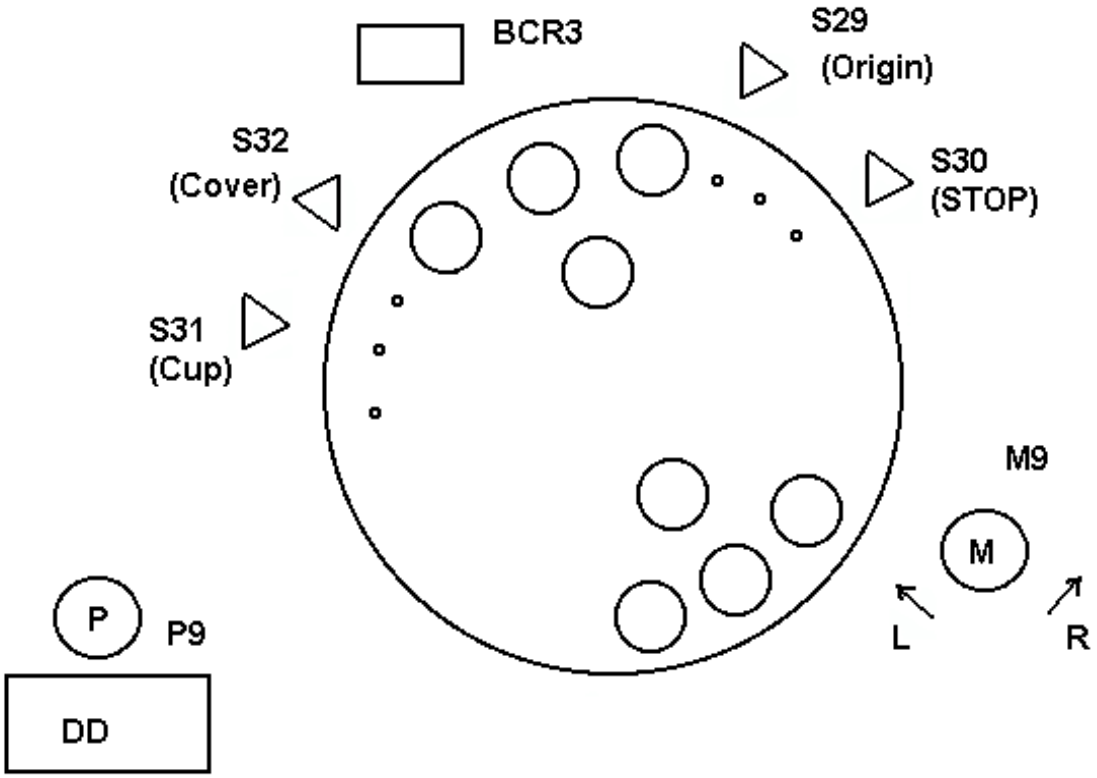
● CA, CB, CC, CD, CE, CH, CG



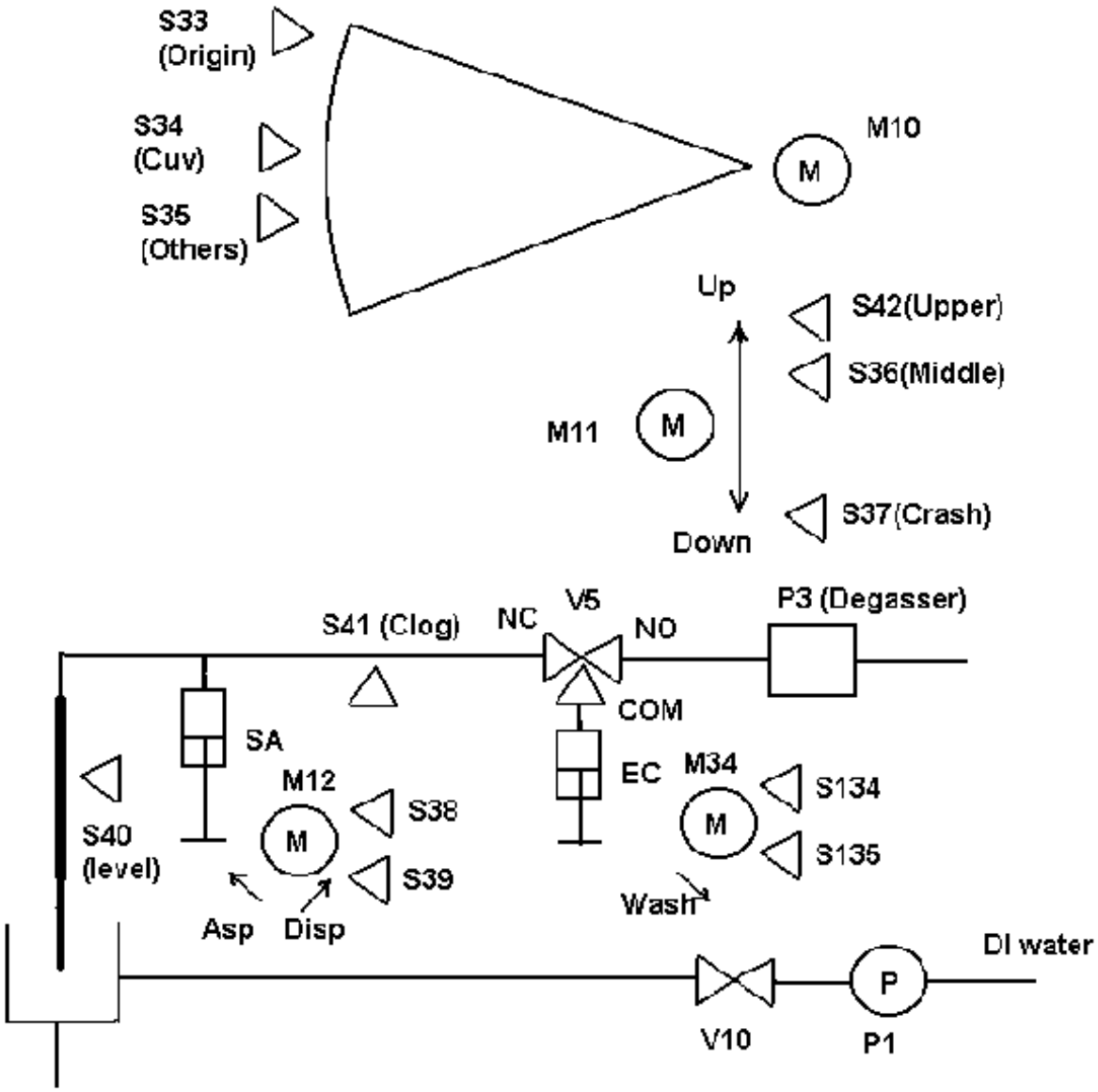
● **DA01/ DA11**


S48/ S120
(Origin)
S52/ S124
(Bottle)
S49/ S121
(33)
1
S50/ S122
(48)
33/ 48
BCR4/
BCR5
M16/ M28
M
P
P8
L
R
DB
S51/ S123 (Cover)

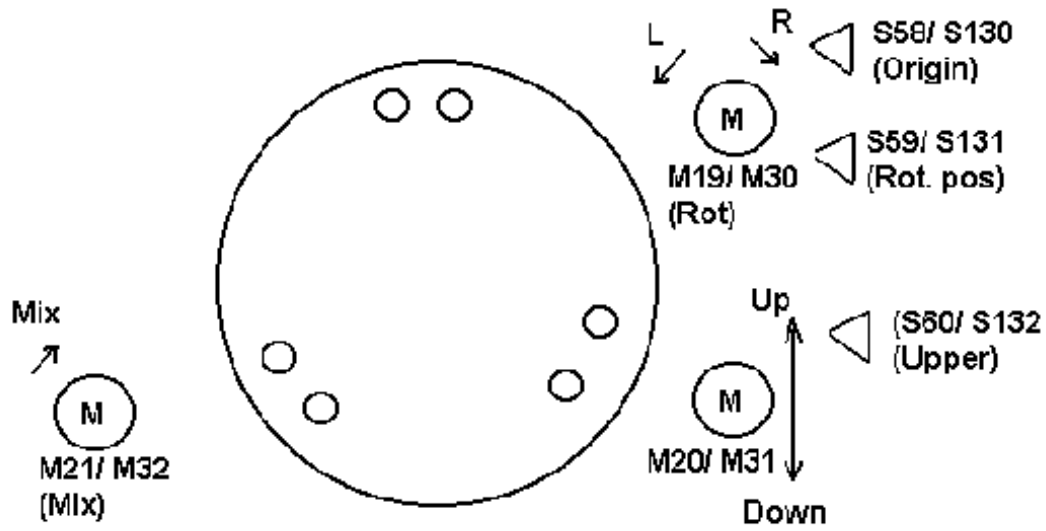
● **DC**

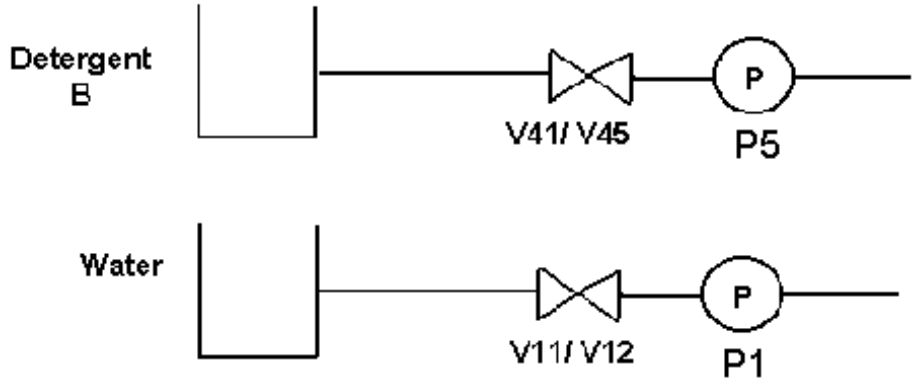


● **FA**

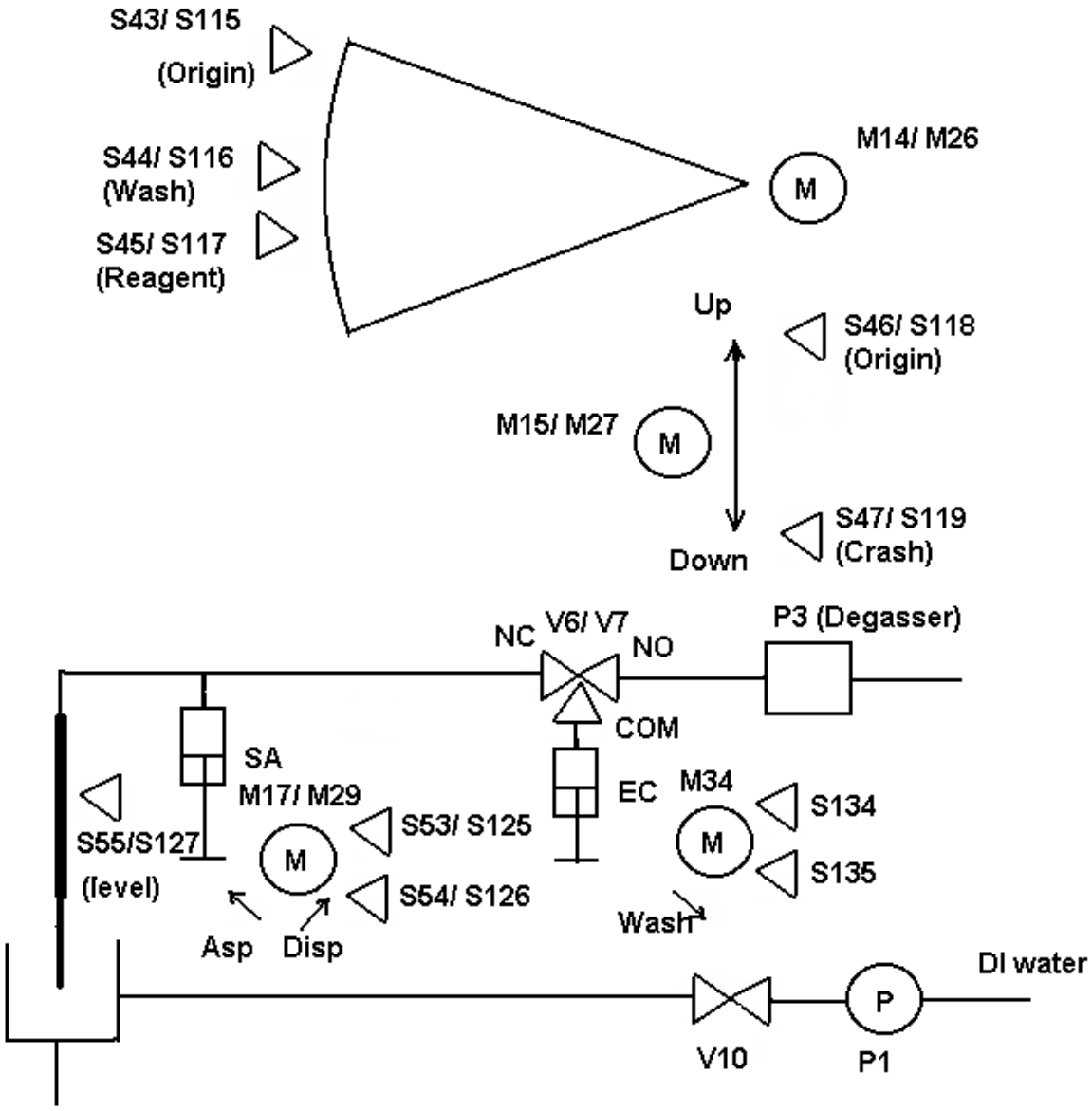

S33
(Origin)
S34
(Cuv)
S35
(Others)
M10
M
Up
S42(Upper)
S36(Middle)
M11
M
S37(Crash)
Down
S41 (Clog)
NC
V5
NO
P3 (Degasser)
COM
SA
EC
M34
S134
S135
M12
S38
S39
S40
(level)
Asp
Disp
Wash
DI water
V10
P
P1

● **FC01/ FC11**

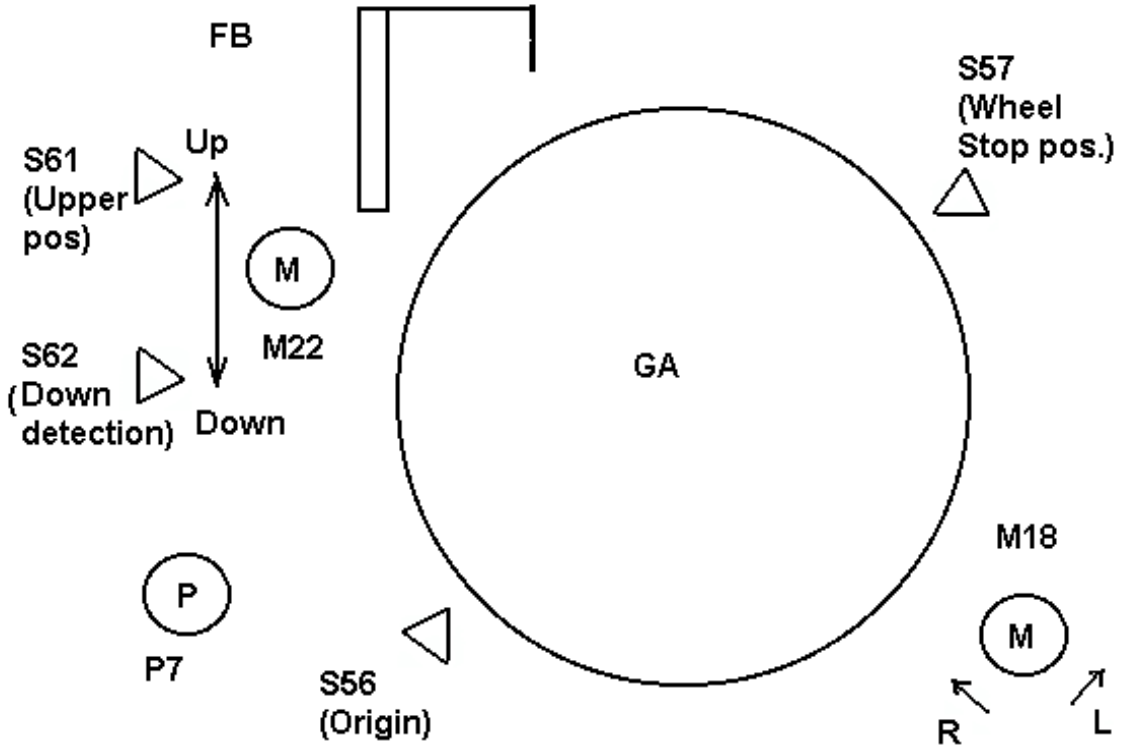

L
R
S58/ S130
(Origin)
M
M19/ M30
(Rot)
S59/ S131
(Rot. pos)
Mix
M
M21/ M32
(MIx)
Up
(S60/ S132
(Upper)
M
M20/ M31
Down


Detergent
B
V41/ V45
P
P5
Water
V11/ V12
P
P1

● **FD01/ FD11**


S43/ S115
(Origin)
S44/ S116
(Wash)
S45/ S117
(Reagent)
M14/ M26
M
Up
S46/ S118
(Origin)
M15/ M27
M
S47/ S119
(Crash)
Down
NC
V6/ V7
NO
P3 (Degasser)
COM
SA
M17/ M29
S53/ S125
S54/ S126
S55/S127
(level)
M
Asp
Disp
EC
M34
S134
S135
M
Wash
DI water
P
V10
P1

● **FB/ GA**



● **Float Switch**

	DI water tank	Deterge nt A	Deterge nt B	Pure A	Pure B	OPH 1	OPH 2	Vacuum tank
Overflow	S65	S71	S75	---	---	S79	S81	S63
Upper	S66	S72	S76	---	---	S98*	S99*	---
Lower	S67	S73	S77	---	---	S80*	S82*	---
Empty	S68	S74	S78	S69	S70	---	---	---

*: The float switches are effective to hard ware control.
Refer to piping diagram to check other structures with valves and pumps.

■ Table of PCB

No.	Name	Unit	Packed No.	Part No.	Remarks
PCB 1	520BTMC4A	AA	MU3577	MV1951	Wash water temperature Cont.
PCB 2	520BPHC1A	AA	MU3596	MV1005	Photometer Cont.
PCB 3	520BRFC1A	AA	MU3597	MV1013	Reagent tray cont.
PCB 4	520BMXC1A	AA	MU3598	MV1014	Mix1 cont.
PCB 5	520BMXC1A	AA	MU3598	MV1014	Mix2 cont.
PCB 6	520BANL1A	AA	MU3602	MV1019	ANL main
PCB 7	520BADR1A	AA	MU3606	MV1024	AC driver
PCB 8	520BCNC1A	AA	MU3607	MV1025	DC valve cont.-1
PCB 9	520BCNC1A	AA	MU3607	MV1025	DC valve cont.-2
PCB 10	520BCNC1A	AA	MU3607	MV1025	DC valve cont.-3
PCB 11	520BTMC7A	AA	MU4659	MV1950	Dilution temperature cont.
PCB 12	520BTMCAA	AA	MU4731	MV1986	Incubator temperature cont.
PCB 13	514BCPU1A	AA	MU5195	MV2074	V53 CPU
PCB 14	514BNCS1A	AA	MU5352	MV2067	Sample clog detection
PCB 15	521BRSC1A	AA	MU5525	MV2344	Rack/ STAT cont.
PCB 16	521BRBC1A	AA	MU5526	MV2345	Automatic repeat run cont.
PCB 17	521BDSC1A	AA	MU5527	MV2346	Dispenser cont.
PCB 18	514BTMC1A	DB	MU5199	MV2115	Reagent compartment peltier cont.
PCB 19	521BTMC1A	DD	MU5530	MV2355	STAT compartment peltier cont.
PCB 20	521BPRC1A	FA	MU5528	MV2347	S probe transfer cont.
PCB 21	521BRLS1A	FA	MU5529	MV2354	S liquid level detection (for M521)
PCB 21	526BRLS1A	FA	MU6776	MV3269	S liquid level detection (for M526)
PCB 22	514BRLS2A	FD01	MU5181	MV2076	R1 liquid level detection(for M521)
PCB 22	516BRLS2A	FD01	MU6774	MV3268	R1 liquid level detection(for M526)
PCB 23	514BPRC1A	FD01	MU5365	MV2329	R1 probe transfer cont.
PCB 24	521BRLS2A	FD11	MU5546	MV2712	R2 liquid level detection(for M521)
PCB 24	526BRLS2A	FD11	MU6779	MV3270	R2 liquid level detection(for M526)
PCB 25	514BPRC1A	FD11	MU5365	MV2329	R2 probe transfer cont.
PCB 26	520BPHD1A	GA	MU3614	MV1006	Photo detection
PCB 27	014BIAN1A	ISE	MU3584	MV1041	ISE analog
PCB 28	015BICN1A	ISE	MU5361	MV2190	ISE control
PCB 29	LED PCB	AA	ZM1526	UDCD42A	LED monitor(Not mounted)
PCB 30	Power cont. PCB	JD	ZM1514	UDCD31A	Power cont.
PCB 31	520BADC2A	EC	MU4627	MV1885	EC driver
PCB 32	240BWPC1A	OPH	MU4135	MV0841	OPH cont. (for Japan, Asia)
PCB 33	520BWPC2A	OPH	MU5055	MV1948	OPH cont. (for ODH)
PCB 34	520BWPC3A	OPH	MU5545	MV1957	OPH cont.(for OAI)

■ Table of power supply

No.	Name	Unit	Packed No.	Part No.	Remarks
PS1	Converter	AA	DP067900	DP067900	LWT30H-5FF (5v, +/-15v - 30w)
PS2	Converter	AA	DP070900	DP070900	LWT15H-5FF (5v, +/-15v - 15w)
PS3	Converter	AA	DP077600	DP077600	EWS600P-24 (24v-600w) for M521
PS3	Converter	AA	DP084800	DP084800	JWS600-24 (24v-600w) for M526
PS4	Converter	AA	DP077600	DP077600	EWS600P-24 (24v-600w) for M521
PS4	Converter	AA	DP084800	DP084800	JWS600-24 (24v-600w) for M526
PS5	Converter	AA	DP076200	DP076200	OLY-40UC (+/-15v- 0.5A, 11.4v- 2A)

■ Table of Barcode reader

No.	Name	Unit	Packed No.	Part No.	Remarks
BCR 1	BCR(Rack)	CA	DZ235400	DZ235400	LSK6220-I1B0JG
BCR 2	BCR(S)	CB	DZ235500	DZ235500	LSK6220-I2B0JG
BCR 3	BCR(STAT)	DC	DZ235500	DZ235500	LSK6220-I2B0JG
BCR 4	BCR(R1)	DA01	DZ195300	DZ195300	LSK6220-A
BCR 5	BCR(R2)	DA11	DZ195300	DZ195300	LSK6220-A

■ Table of Loads (Motors/ Solenoid)

No.	Name	Short name	Unit
M1	CA rack feed motor	CA rack feed	CA
M2	CB belt feed motor	CB belt	CB
M4	ID pawl feed motor	ID pawl	CG01
M5	Sample pawl feed motor	S pawl	CG02
M6	CC rack send motor	CC rack send	CC
M7	CD rack send motor	CD rack send	CD
M8	CE rack push motor	CE rack push	CE
M9	STAT rotation motor	STAT rot.	DC
M10	Sample probe rotation motor	S probe rot.	FA(R/L)
M11	Sample probe up/ down motor	S probe U/D	FA(U/D)
M12	Sample dispense motor	S disp.	SA
M13	CC rack support solenoid	CC rack support	CC
M14	R1 probe rotation motor	R1 probe rot.	FD01(R/L)
M15	R1 probe up/ down motor	R1 probe U/D	FD01(U/D)
M16	R1 tray rotation motor	R1 tray rot.	DA01
M17	R1 dispense motor	R1 disp.	SA
M18	Cuv wheel rotation motor	Cuv rot.	GA
M19	MIX1 rotation motor	M1 rot.	FC01(R/L)
M20	MIX1 up/ down motor	M1 U/D	FC01(U/D)
M21	MIX1 mix motor	M1 mix	FC01(MIX)
M22	Cuv wash nozzle up/ down motor	Cuv wash U/D	FB
M23	ISE buffer dispense motor	ISE B disp.	ISE
M24	ISE mix motor	ISE mix	ISE
M26	R2 probe rotation motor	R2 probe rot.	FD11(R/L)
M27	R2 probe up/ down motor	R2 probe U/D	FD11(U/D)
M28	R2 tray rotation motor	R2 tray rot.	DA11
M29	R2 dispense motor	R2 disp.	SA
M30	MIX2 rotation motor	M2 rot.	FC11(R/L)
M31	MIX2 up/ down motor	M2 U/D	FC11(U/D)
M32	MIX2 mix motor	M2 mix	FC11(MIX)
M34	Probe inner wash motor	Probe inner wash	EC

■ Table of Loads (Pumps/ others)

No.	Name	Short name	Unit
C1	Sample counter	S counter	AA
BCR1	Bar code reader (Rack ID)	BCR (Rack)	CA
BCR2	Bar code reader (Sample ID)	BCR (S)	CB
BCR3	Bar code reader (STAT sample ID)	BCR (STAT)	DC
BCR4	Bar code reader (Reagent 1 ID)	BCR (R1)	DA01
BCR5	Bar code reader (Reagent 2 ID)	BCR (R2)	DA11
L1	CA rack set disable LED	CA disable LED	AA
L2	STAT END LED	STAT END LED	AA
L3	STAT SET LED	STAT SET LED	AA
P1	Deionized water supply pump	DI water pump	AA
P2	Detergent dilution pump	Detergent dilution pump	AA
P3	Degassor	Degassor	HA
P4	Detergent A supply pump	Detergent A pump	AA
P5	Detergent B supply pump	Detergent B pump	AA
P6	Vacuum pump	Vacuum pump	AA
P7	Cuv wheel heating liquid circulation pump	GA circulation pump	AA
P8	Reagent compartment cooling liquid circulation pump	DA circulation pump	DB
P9	STAT cooling liquid circulation pump	DC circulation pump	DD
P10	Compulsory waste pump(Non-concentrated waste)	OPH1	OPH
P11	Compulsory waste pump(Concentrated waste)	OPH2	OPH
P12	Pure detergent A supply pump	Pure detergent A pump	AA
P13	Pure detergent B supply pump	Pure detergent B pump	AA

■ Table of Loads (Valves)

No.	Name	Short name	Unit
V1	Option water supply valve	OPD	OPD
V2	Water supply valve	Water supply valve	AA
V3	Detergent A dilution valve	Detergent A dilution valve	AA
V4	Detergent B dilution valve	Detergent B dilution valve	AA
V5	Sample probe inner wash valve	S inner wash valve	AA
V6	R1 probe inner wash valve	R1 inner wash valve	AA
V7	R2 probe inner wash valve	R2 inner wash valve	AA
V10	Probe outer wash valve	Probe outer wash valve	AA
V11	S/R1 MIX1 wash water discharge valve	S/R1 M1 wash valve	AA
V12	R2 MIX2 wash water discharge valve	R2 M2 wash valve	AA
V16	Wash water disp. valve	Wash water disp. valve	AA
V17	Detergent A dispense valve	Detergent A disp. valve	AA
V18	Detergent B dispense valve	Detergent B disp. valve	AA
V19	Wash water drip prevention valve	Wash water drip valve	AA
V20	Detergent A drip prevention valve	Detergent A drip valve	AA
V21	Detergent B drip prevention valve	Detergent B drip valve	AA
V22	Air release valve for overflow	OVF air release valve	AA
V23	Overflow aspiration valve	OVF asp. valve	AA
V24	Overflow drain valve	OVF drain valve	AA
V25	Air release valve for liquid dripping	Drip air release valve	AA
V26	Liquid dripping aspiration valve	Drip asp. valve	AA
V27	Liquid dripping drain valve	Liquid dripping drain valve	AA
V28	Concentrated waste air release valve	Conc. waste air release valve	AA
V29	Mixture aspiration valve	Mixture asp. valve	AA
V30	Mixture drain valve	Mixture drain valve	AA
V31	Air release valve for aspiration	Aspiration air release valve	AA
V32	Wash water aspiration valve	Wash water asp. valve	AA
V33	Aspiration drain valve	Aspiration drain valve	AA
V34	Vacuum tank waste water valve	Vacuum waste valve	AA
V35	ISE flowcell valve	ISE flowcell valve	ISE
V36	ISE REF valve	ISE REF valve	ISE
V37	ISE buffer valve	ISE B valve	ISE
V40	Air drive valve (from P2)	Air drive valve	AA
V41	S/R1 MIX1 detergent B discharge valve	S/R1 M1detergent B valve	AA
V45	R2 MIX2 detergent B discharge valve	R2 M2 detergent B valve	AA

■ Table of Sensors (1/ 3)

No.	Name	Short name	Unit
S1	CA feed pitch sensor	CA feed pitch	CA
S2	CA receptacle pitch sensor	CA receptacle pitch	CA
S3	CA rack present sensor	CA rack present	CA
S4	Rack type 1 sensor	Rack type 1	CA
S5	Rack type 2 sensor	Rack type 2	CA
S6	Rack type 3 sensor	Rack type 3	CA
S7	CB rack detection sensor	CB rack detection	CB
S8	CB sample cup detection sensor	CB cup detection	CB
S11	ID pawl feed origin sensor	ID pawl origin	CG
S14	Sample pawl feed origin sensor	S pawl origin	CG
S16	Rack feed detection sensor	Rack feed detection	CB
S24	CE rack wait position sensor	CE rack wait pos.	CE
S25	CE push Position sensor	CE push Pos.	CE
S26	Rack full sensor	Rack full	CH
S29	STAT rotation origin sensor	STAT rot. origin	DC
S30	STAT rotation stop position sensor	STAT rot. stop pos.	DC
S31	STAT sample tube exist sensor	STAT sample tube exist	DC
S32	STAT cover open sensor	STAT cover open	DC
S33	S probe rotation origin sensor	S rot. origin	FA(R/L)
S34	Sample probe rotation cuv position sensor	S rot cuv pos.	FA(R/L)
S35	Sample probe rotation stop position sensor (STAT in/out, rack, wash, ISE)	S rot. stop pos.	FA(R/L)
S36	Sample probe middle position sensor	S probe middle pos.	FA(U/D)
S37	Sample probe crash detection sensor	S probe crash detection	FA(U/D)
S38	S dispenser upper position sensor	S disp. upper pos.	SA
S39	S dispenser lower position sensor	S disp. lower pos.	SA
S40	Sample liquid level detection sensor	S liquid level detection	FA(U/D)
S41	Sample clog detection sensor	S clog detection	SA
S42	Sample probe upper position / origin sensor	Sample probe upper pos.	FA(U/D)
S43	R1 probe rotation origin sensor	R1 probe rot. origin	FD01(R/L)
S44	R1 probe rotation cuv position sensor	R1 probe rot. cuv pos.	FD01(R/L)
S45	R1 probe rotation stop position sensor	R1 probe rot. stop pos.	FD01(R/L)
S46	R1 probe upper position sensor	R1 probe upper pos.	FD01(U/D)
S47	R1 probe crash detection sensor	R1 probe crash detection	FD01(U/D)
S48	R1 tray rotation origin sensor	R1 tray rot. origin	DA01
S49	R1 tray stop position (33) sensor	R1 tray stop pos. (33)	DA01
S50	R1 tray stop position (48) sensor	R1 tray stop pos. (48)	DA01
S51	R1 cover open sensor	R1 cover open	DA01
S52	R1 bottle detection sensor	R1 bottle detection	DA01

■ Table of Sensors (2/ 3)

No.	Name	Short name	Unit
S53	R1 dispenser upper position sensor	R1 disp. upper pos.	SA
S54	R1 dispenser lower position sensor	R1 disp. lower pos.	SA
S55	R1 liquid level detection sensor	R1 liquid level detection	FD01(U/D)
S56	Cuv wheel origin sensor	Cuv wheel origin	GA
S57	Cuv wheel stop position sensor	Cuv wheel stop pos.	GA
S58	MIX1 rotation origin sensor	M1 rot. origin	FC01(R/L)
S59	MIX1 rotation stop position sensor	M1 rot. stop pos.	FC01(R/L)
S60	MIX1 upper position sensor	M1 upper pos.	FC01(U/D)
S61	Cuv wash nozzle upper position sensor	FB upper pos.	FB
S62	Cuv wash nozzle downward detection sensor	FB down detection	FB
S63	Vacuum tank full sensor	Vacuum tank full	AA
S64	Vacuum tank pressure sensor	Vacuum tank pressure SW	AA
S65	Deionized water tank float SW (overflow)	DI water (overflow)	AA
S66	Deionized water tank float SW (upper)	DI water (upper)	AA
S67	Deionized water tank float SW (lower)	DI water (lower)	AA
S68	Deionized water tank float SW (empty)	DI water (empty)	AA
S69	Pure detergent A tank float SW (empty)	Pure detergent A (empty)	AA
S70	Pure detergent B tank float SW (empty)	Pure detergent B (empty)	AA
S71	Detergent A tank float SW (overflow)	Detergent A (overflow)	AA
S72	Detergent A tank float SW (upper)	Detergent A (upper)	AA
S73	Detergent A tank float SW (lower)	Detergent A (lower)	AA
S74	Detergent A tank float SW (empty)	Detergent A (empty)	AA
S75	Detergent B tank float SW (overflow)	Detergent B (overflow)	AA
S76	Detergent B tank float SW (upper)	Detergent B (upper)	AA
S77	Detergent B tank float SW (lower)	Detergent B (lower)	AA
S78	Detergent B tank float SW (empty)	Detergent B (empty)	AA
S79	Compulsory waste (Non-concentrated waste) tank float SW (full)	OPH1 full	OPH
S81	Compulsory waste (Concentrated waste) tank float SW (full)	OPH2 full	OPH
S83	ISE buffer dispenser upper position sensor	ISE B disp. upper pos.	SA
S84	ISE buffer dispenser lower position sensor	ISE B disp. lower pos.	SA
S86	ISE buffer sensor (empty)	ISE B empty	ISE
S87	ISE MID-STD sensor (empty)	ISE MID empty	ISE
S88	ISE reference sensor (empty)	ISE REF empty	ISE
S91	LA rack arrival sensor (option)	LA rack arrival	CA
S92	LA manual rack set sensor (option)	LA manual rack set	CA
S93	LA rack pass sensor(option)	LA rack pass	CA

■ Table of Sensors (3/ 3)

No.	Name	Short name	Unit
S100	CC cover open sensor	CC cover open	CC
S101	CC rack arrival sensor	CC rack arrival	CC
S102	CC pre-rack detection sensor	CC pre-rack detection	CC
S103	CC rack feed origin sensor	CC rack feed origin	CC
S104	CC rack feed position sensor	CC rack feed pos.	CC
S105	CC shaft lower position sensor	CC shaft lower pos.	CC
S106	CC rack push position sensor	CC rack push pos.	CC
S107	CD rack feed origin sensor		CD
S109	CD retrieval position sensor	CD retrieval pos.	CD
S110	CD rack repeat position sensor	CD rack repeat pos.	CD
S111	CD rack arrival detection sensor	CD rack arrival detection	CD
S112	CA repeat run arrival sensor	CA repeat run arrival	CA
S113	CD repeat run rack pass sensor	CD repeat run rack pass	CD
S114	CD retrieval rack pass sensor	CD retrieval rack pass	CD
S115	R2 probe rotation origin sensor	R2 probe rot. origin	FD11(R/L)
S116	R2 probe rotation cuv position sensor	R2 probe rot. cuv pos.	FD11(R/L)
S117	R2 probe rotation stop position sensor	R2 probe rot. stop pos.	FD11(R/L)
S118	R2 probe upper position sensor	R2 probe upper pos.	FD11(U/D)
S119	R2 probe crash detection sensor	R2 probe crash detection	FD11(U/D)
S120	R2 tray rotation origin sensor	R2 tray rot. origin	DA11
S121	R2 tray stop position (33) sensor	R2 tray stop pos. (33)	DA11
S122	R2 tray stop position (48) sensor	R2 tray stop pos. (48)	DA11
S123	R2 cover open sensor	R2 cover open	DA11
S124	R2 bottle detection sensor	R2 bottle detection	DA11
S125	R2 dispenser upper position sensor	R2 disp. upper pos.	SA
S126	R2 dispenser lower position sensor	R2 disp. lower pos.	SA
S127	R2 liquid level detection sensor	R2 liquid level detection	FD11(U/D)
S130	MIX2 rotation origin sensor	M2 rot. origin	FC11(R/L)
S131	MIX2 rotation stop position sensor	M2 rot. stop pos.	FC11(R/L)
S132	MIX2 upper position sensor	M2 upper pos.	FC11(U/D)
S134	EC upper position sensor	EC upper pos.	EC
S135	EC lower position sensor	EC lower pos.	EC
SW1	STAT SW	STAT SW	AA
SW2	STAT rotation/ DIAG SW	DIAG SW	AA

■ Table of Thermistors

No.	Name	Short name	Unit
	Reagent compartment thermistors	DA temp	DA01
	STAT sample compartment thermistor	DC temp	DC01
	Incubator thermistor	GA temp	GA
	ANL inside temp monitor thermistor	ANL temp	AA
	R2 heating unit thermistor	R2 temp	AA
	DI water heating unit thermistor	Water temp	AA
	Wash water heating unit thermistor 1	Wash temp 1	AA
	Wash water heating unit thermistor 2	Wash temp 2	AA

■ Program media table

No.	Name	Unit	Packed No.	Part No.	Remarks
	Program for M521		MU8165	MV2551	CDROM for Japan
	Program for M521		MU8166	MV2552	CDROM for OAI
	Program for M521		MU8167	MV2553	CDROM for ODH
	Program for M521		MU8168	MV2554	CDROM for Australia/ Asia
	Program for M526		MU8298	MV3308	CDROM for Japan
	Program for M526		MU8299	MV3309	CDROM for OAI
	Program for M526		MU8300	MV3310	CDROM for ODH
	Program for M526		MU8301	MV3311	CDROM for Australia/ Asia
	520PPR03	AA MV1019	MU3589	MV1030	ANL Communication master PROM
	520PPR10	AA MV1005	MU3595	MV1037	Photometer cont. PROM
	514PPR10	AA MV1019	MU5354	MV2181	ANL IPL PROM
	521PPR01	AA MV2344	MU5518	MV2348	Rack cont. PROM
	521PPR02	AA MV2345	MU5519	MV2349	Automatic repeat run cont. PROM
	521PPR03	AA MV2346	MU5520	MV2350	Dispenser cont. PROM
	521PPR05	AA MV1013	MU5522	MV2352	Reagent compartment cont. PROM
	521PPR06	AA MV1014	MU5523	MV2353	Mix cont. PROM 2 pcs are used
	521PPR07	AA MV1019	MU5524	MV2611	ISE I/F PROM
	514PPR09	FA MV2347	MU5521	MV2351	S probe transfer cont. PROM
	514PPR12	FD MV2329	MU5366	MV2330	R probe transfer cont. PROM 2 pcs used
	015PPR01	ISE MV2190	MU5360	MV2191	ISE cont PROM

(Note)
The program CD for M526 is developed for the upgrade machines. The program CD for M526 is able to use on M521 machines. The program CD for M521 can not be used on upgrade machines.
The first release of the program CD for M526 is version 4.2. There is no overlap between M521 and M526 in version number.

■ Product Outline

Aim of the product

(1) Completion of the lineup with a model with a processing speed between the AU800 and the AU400.
(2) Share expansion by business correspondence in regard to reagent and equipment system.
(3) Offering of user merits by standardization and use of reagents and operations methods common with the AU400.

Object markets

1. Destinations

Japan/America/Europe/general areas

2. Object users

Japan/Europe: Medium-sized hospitals (max. about 100 samples/day)
America/general areas: Large to medium-sized hospitals (max. about 200 samples/day)

3. Use purpose

Electrolyte analysis in serum and urine

Positioning on the market, relation to competing products

1. Positioning

Biochemical analysis equipment for processing of medium to small quantities of samples at medium-sized and small hospitals.
Biochemical analysis equipment with the main purpose of STAT inspections at large or medium-sized hospitals.

2. Competing products

Manufacturer	Product	Main features
Olympus	AU640	Na, K, CL : 3 items, 200 samples/h
Hitachi	7170	Na, K, CL : 3 items, 200 samples/h
Shimadzu	CL-8000	Na, K, CL : 3 items, 133 samples/h
Toshiba	40FR	Na, K, CL : 3 items, 200 samples/h
Beckmann	CX5	Na, K, CL, TCO2 : 4 items, 75 samples/h
Dupont	Dimension AR	Na, K, CL, TCO2 : 4 items, 67 samples/h
J&J	Ektachem550	Na, K, CL, TCO2 : 4 items
Bayer	Opera	Na, K, TOC 2 : 3 items

Correspondence to laws and regulations

1. Acquired external standards

For Japan:
- Pharmaceutical Affairs Law
- Standard for compliance with the EMC standard for electric equipment for medical use (guideline)

For OAI:
- FDA 510K (self-proclaimed by OAI)
- FCC - Part 15, subpart B, class A
- CSA C22.2 No.1010-1

For ODC:
- CE mark
  - EMC
    - Emission EN55011 (conforming to CISPR)
    - Immunity EN50082-2
  - Low-voltage directive EN61010-1

For Australia:
- Australia EMC regulation, C-tick mark (emission CISPR11)

All destinations:
- Radiation field (testing is represented by the tests for ODC)

2. Observed external regulations

For Japan:
- Container packaging recycle law
- Waste treatment law
- Water pollution control law
- Sewage water law
- Security treaty export control regulations

For OAI:
- FDC law, part 1040.10 (safety of lasers and other light-emitting products)
- FDC law 21CFR, part 820 (GMP)
- Regulations for used batteries: CE4212
- Regulations in regard to packaging materials containing harmful substances

For ODC:
- Regulations in regard to batteries (Europe)
- Regulations in regard to packaging waste materials (Germany)
- Safety standards for equipment for hospital test laboratories (England)

Entire world:
- Ozone layer protection
- PL law
- Regulations in regard to asbestos

Service life

5 years or 300,000 samples or more.

Product life

5 years

■ Special Features (sales points)

1. The use of a crown ether layer for the Na and K electrodes and the use of a superlaminated solidifying molecular orientation layer (MO layer) for the Cl electrode improves the responsiveness and the durability and shows the following important special features.
   (1) The crown ether layer of the Na and K electrodes has high responsiveness, and good selectivity, and it is not easily influenced by chemical obstruction substances (proteins etc.).
   (2) The Cl electrode uses a superlaminated solidifying molecular orientation layer (MO layer) with technology for solid lamination of several 10,000 molecular layers, so that high-speed response and high selectivity (in regard to Br and HCO3 are realized in comparison with conventional Cl electrodes.
   (3) The high-speed response permits processing of 200 samples/h with one electrode for Na, K, Cl electrolyte measuring.

2. Differing from the flame method, the equipment is safe as no propane gas is used, and there is little heat generation.
3. Measuring of raw urine is possible, and sample dilution is not required.

■ Limiting Conditions

Installation and use environment conditions

- A place not exposed to direct sunlight
- A place with little dust
- A flat place with little inclination (max. slope: 1/200)
- A place with few vibrations
- A place with sufficient floor strength in regard to the weight of the AU640
- A place without severe voltage fluctuations (voltage fluctuations within ± 10%)
- A place with no machines producing abnormal noise in the vicinity
- The temperature during use shall be from 18 to 32°C (the fluctuations after calibration shall be within ± 2°C), the humidity during use shall be from 40 to 80% RH, and there shall be no condensation (the installation ambient temperature shall be 5 to 40°C).
- Portable telephones and radios shall be switched off when entering the room where the AU640 is installed.

Caution items and prohibition items

For the general caution items, refer to the contents of the notification by the Pharmaceutical Affairs Bureau of the Ministry of Health and Welfare, No. 495, dated June 1, 1972, shown in the operation manual.

In addition, the caution items listed in the operation manual and the caution plates on the equipment shall be observed.

Equipment user

The equipment shall be used and operated by persons who have been trained by our company or by people who have been trained by people trained by our company.

■ Specifications

Measuring method

Dilution-type ion electrode method (method with fixed dilution tube)

Measuring items

Na, K, Cl ions

Measuring samples

Serum, urine

Processing speed

Max. 200 samples/h (18 sec interval)

Sample quantity

Serum: 20 µl
Urine: 25 µl

Dilution factor

Serum: 32.4 times
Urine: 31.4 times

Calibration

1. External 2-point calibration (electrode sensitivity calibration)
   * Independent calibration for serum and urine
2. External 1-point calibration (ACAL)

Measuring range

	Serum mode	Urine mode
Na	50 to 200	10 to 400
K	1.0 to 10.0	2.0 to 200
Cl	50 to 200	15 to 400

Unit: mmol/l

Electrodes

Na electrode : Crown ether layer
K electrode : Crown ether layer
Cl electrode : Solid layer (class 4 ammonium salt)
Comparison electrode : Liquid junction type (silver/silver chloride electrode)

Electrode Storage Life

Na electrode : 12 months after manufacture
K electrode : 12 months after manufacture
Cl electrode : 12 months after manufacture
Comparison electrode : 12 months after manufacture

Storage conditions
Temperature : 0 to 40°C
Humidity : 20 to 90%
Air pressure : 0.7 to 1.1 atmospheres

Electrode life

Na electrode : 2 months or 20,000 samples or more
K electrode : 2 months or 20,000 samples or more
Cl electrode : 2 months or 20,000 samples or more
Comparison electrode : 24 months or 150,000 samples or more

The sample number or the period which is reached first shall be used.

* This applies when use starts within the electrode storage life. For electrodes which have exceeded the electrode storage life, the life of the electrode shall be determined under the assumption that use was started on the last day of the electrode storage life.

Durability of perister tube and syringe

Perister tube: 3 months or 20,000 samples or more
Syringe: 150,000 samples or more

Use environment

Temperature : 18 to 32°C
Temperature fluctuations : ± 2°C (temperature fluctuations after calibration)
Humidity : 40 to 80% RH

Power supply

DC +5V, DC +24V

Max. rated power consumption

Max. 100 VA

Weight

About 98 N (only the body case)

■ CA unit view

● Front view

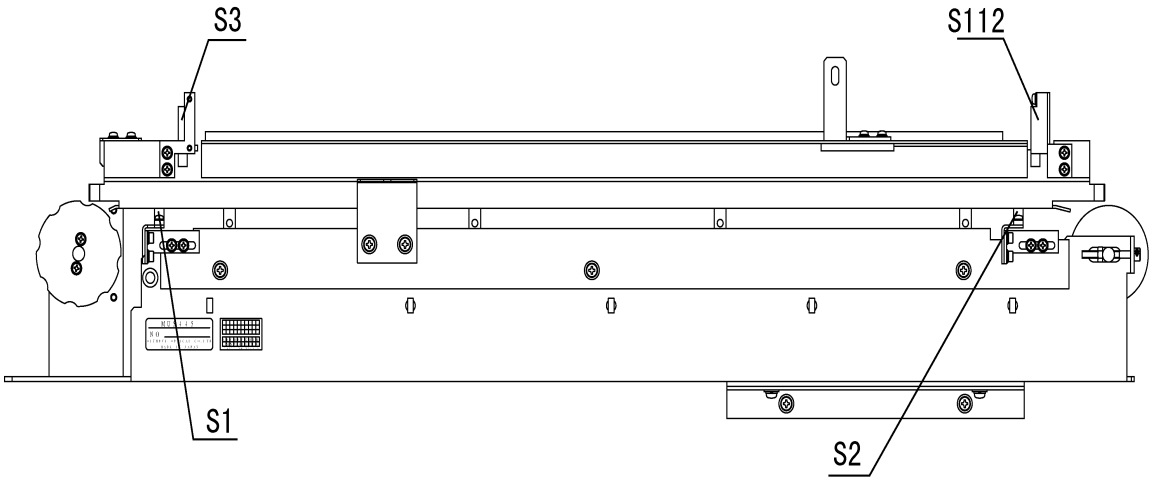


Fig 1

● Top view

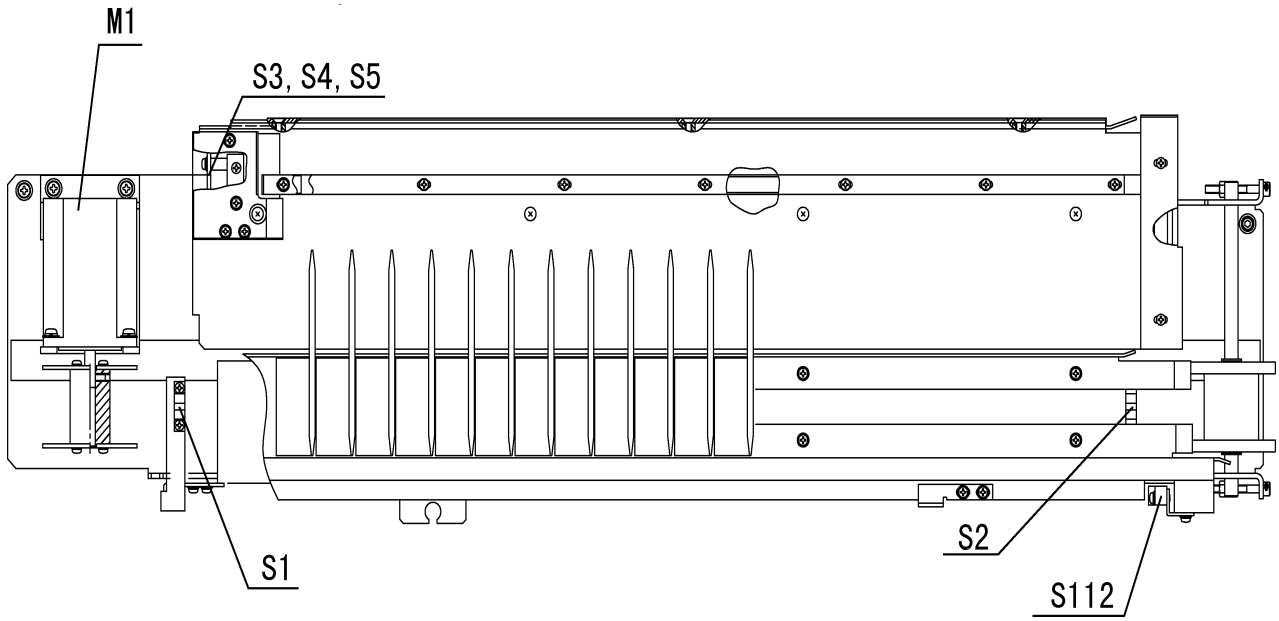


Fig 2

■ Operation Explanations for the CA Unit

Initialization operation

1. Movement away from the origin
   - The CA rack feed motor (M1) operates for 25 P in CW direction facing the motor shaft and then stops. (Operation pulse rate: 240 pps, rack movement speed: 59.7 mm/s, rack operation amount: 6.23 mm) (When the CA feed pitch sensor (S1) is detected after the operation, the motor operates for another 25 P in CW direction and then stops.)
   - After this operation, the CA rack feed motor (M1) operates for max. 120 P in CCW direction facing the motor shaft.
   - The motor stops when the CA feed pitch sensor is detected during the operation.

Rack feed operation

1. Transfer from the rack setting position to the rack identification position
   - The CA rack feed motor (M1) operates for max. 120 P in CCW direction facing the motor shaft. (Operation pulse rate: 240 pps, rack movement speed: 57.8 mm/s, rack motion: 29.9 mm)
   - The motor stops when the CA feed pitch sensor (S1) is detected during the operation. (1 rack pitch corresponds to 99 P.) (The alarm 1 is generated when (S1) is not detected after the max. movement of 120 P.)
   - After the motor stops, the CA rack present sensor (S3) is checked, and when no rack is detected, rack feed is performed again. This is repeated for a maximum of 23 times when no rack is detected.
   - When (S3) has detected the rack, the rack type is identified by the rack type sensors (S4), (S5), and (S6). The alarm 2 is generated when the rack type can not be detected.

Rack feed operation prohibition conditions

1. At the time of detection by the CB rack detection sensor (S7)
2. At the time of detection by the CD repeat run rack pass sensor (S113)

2. Transfer from the rack identification position to the CB unit (rack ID detection is performed simultaneously)
   - For reading of the rack ID, detection is started by the bar code reader (rack ID) (BCR1).
   - After 0.4 sec, the CA rack feed motor (M1) operates for 22 P in CCW direction facing the motor shaft. Moving reading of the rack ID is performed by this.
     (Operation pulse rate: 45 pps, rack movement speed: 11.21 mm/s, rack motion: 5.5 mm)
   - After completion of rack detection, (M1) rotates in CCW direction and stops when the CA feed pitch sensor(S1) is detected.
     (1 rack pitch corresponds to 99 P.)
     (Operation pulse rate: 240 pps, rack movement speed: 59.76 mm/s, rack motion: 29.9 mm)
     (The alarm 1 is generated when (S1) is not detected after the max. movement of 120 P.)
   - The alarm 2 is generated when the rack ID can not be detected.

Rack feed operation prohibition

1. At the time of detection of the CB rack detection sensor (S7)
2. At the time of detection by the CD repeat run rack pass sensor (S113)

Rack reception operation

1. Transfer from the normal stop position to the rerun rack reception position
   - The CA rack feed motor (M1) operates for max. 120 P in CCW direction facing the motor shaft.
     (Operation pulse rate: 240 pps, rack movement speed: 59.76 mm/s, rack motion: 29.9 mm)
   - The motor stops when the CA receptacle pitch sensor (S2) is detected during the operation.
     (1 rack pitch corresponds to 50 P.)
     (The alarm 3 is generated when (S2) is not detected after the max. movement of 120 P.)

Rack reception operation prohibition conditions

1. At the time of detection of the CA repeat run arrival sensor (S112)
2. At the time of detection of the CB rack detection sensor (S7)
3. At the time of detection by the CD repeat run rack pass sensor (S113)

Alarm types

1. Alarm 1

   Movement has been made to MEASURE2 in spite of repeat run. In this case, direct restart is not possible. Remove the alarm cause after the equipment operation has ended and then start the equipment.

2. Alarm 2

   With repeat run: PULSE (operation start by removing the respective rack and canceling PULSE)
   Without repeat run: MEASURE2 (restart after removing the respective rack)

3. Alarm 3

   Movement to MEASURE2. In this case, direct restart is not possible.

4. Alarm 4

   Only alarm. Analysis operation is continued.

■ CB unit view

● Front view

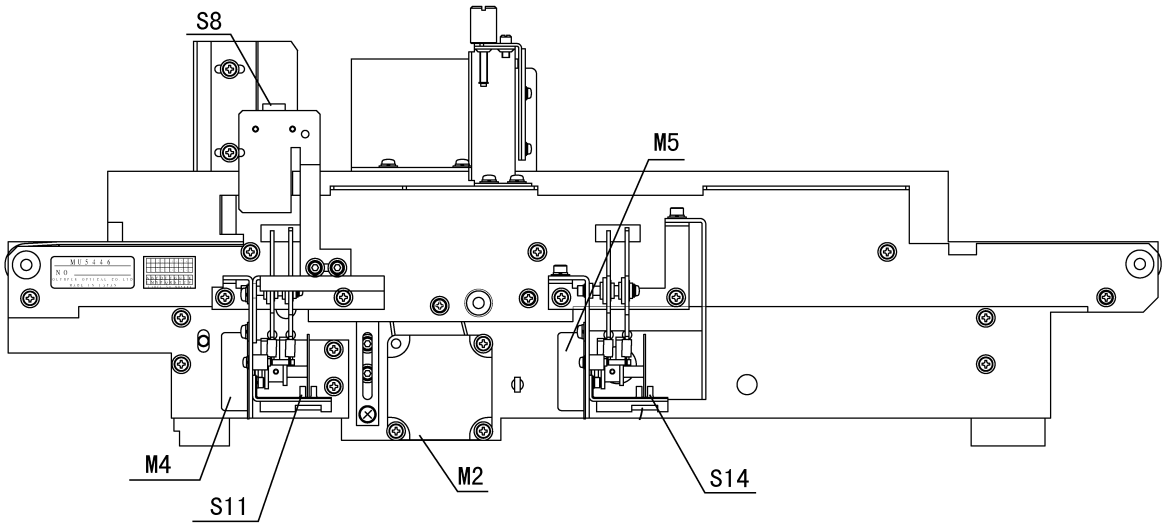


Fig 1

● Top view

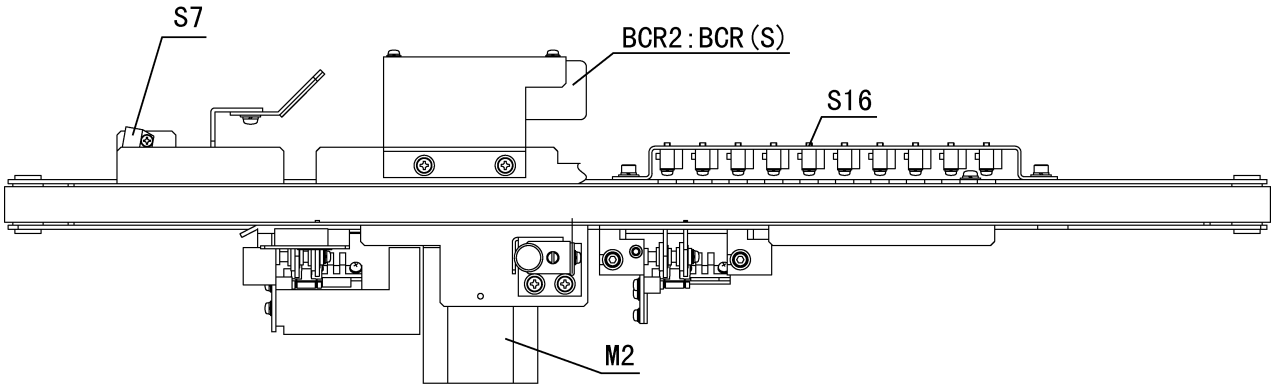


Fig 2

■ Operation Explanations for the CB Unit

Initialization operation

1. Movement away from the origin (CG unit)
   - The ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for 20 P in CW direction facing the motor shaft and stop.
     (Operation pulse rate: 300 pps, cam rotation speed: 562.5°/s, cam rotation angle: 46.875°)
     (With detection of (S11), (S14) after the operation, the motors operate for another 20 P in CW direction and stop.)
   - After this operation, the ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for max. 192 P in CCW direction facing the motor shaft.
   - Immediate stop is performed when the ID pawl feed origin sensor (S11) or the CB sample pawl feed origin sensor (S14) is detected after the operation.
2. Rack discharge operation
   - The ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for 48 P in CCW direction facing the motor shaft and stop. (Release position)
     (Operation pulse rate: 300 pps, cam rotation speed: 562.5°/s, cam rotation angle: 90°)
   - Afterwards, the CB belt feed motor (M2) rotates for 3870 P (required movement distance: 540 mm) in CCW direction facing the motor shaft and discharges the rack on the CB unit.
     (Operation pulse rate: 860 pps, rack movement speed: 140.18 mm/sec)
   - However, at the time of discharge, the CA unit shall be stopped at the rack feed position and the CC unit shall be stopped at the origin position.

Belt feed operation

1. Transfer from CA to the sample ID position
   - Arrival of the rack at the rack feed position is detected by the CB rack detection sensor (S7).
   - Afterwards, the CB belt feed motor (M2) rotates for 600 P (required movement distance: 41.5 mm) in CCW direction facing the motor shaft, and the leading cup in the rack is moved to the ID reading position.
     (Operation pulse rate: 860 pps, rack movement speed: 140.18 mm/sec)
   - The cup is detected by the CB sample cup detection sensor (S8).
     (The alarm 4 is generated when detection by (S8) is not possible.)
   - Then the sample bar code is read by the bar code reader (sample ID) (BCR21).
   - 0.1 s after start of reading by the bar code reader, the ID pawl feed motor (M4) operates for 32 P in CW direction facing the motor shaft and brings the pawl to the half step position.
   - 0.3 s after start of reading by the bar code reader, the CB belt feed motor rotates for 19 P (required movement distance: 3.1 mm) in CCW direction facing the motor shaft, the rack is advanced at crawling speed, and moving reading of the sample ID is performed.
     (Operation pulse rate: 190 pps, rack movement speed: 31 mm/sec)
     (The alarm 3 is generated when the bar code can not be read.)
   - From 0.2 s before completion of reading by the bar code reader (reading time: 1 s), the CB belt feed motor (M2) operates for 688 P in CCW direction facing the motor shaft.
     (Operation pulse rate: 860 pps, rack movement speed: 140.18 mm/sec)

- Directly after completion of reading by the bar code reader, the cup ID pawl feed motor (M4) operates for 32 P in CCW direction facing the motor shaft.

Rack feed operation prohibition conditions

1. When (S11) and (S14) have not been detected before the start of operation

2. Rack pitch feed (common for sample ID position and sample aspiration position)

The belt is operated twice according to the construction of the CG unit.

Rack feed detection is performed by the rack feed detection sensor (S16) only at the sample aspiration position.

First operation

- The ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for 32 P in CW direction facing the motor shaft.
  (Operation pulse rate: 300 pps, cam rotation speed: 562.5°/s, cam rotation angle: 60°)
- The CB belt feed motor (M2) operates for 19 P in CCW direction facing the motor shaft.
  (Operation pulse rate: 190 pps, rack movement speed: 31 mm/sec)

Second operation

- The ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for 32 P in CCW direction facing the motor shaft.
  (The alarm 3 is generated when (S11) and (S14) are not detected even after the max. movement of 150 P.)
- From 0.2 s before start of operation of the ID pawl feed motor, the CB belt feed motor (M2) operates for 688 P in CCW direction facing the motor shaft.
- Cup presence detection and sample ID reading are performed after completion of pitch feed operation.

Rack feed operation prohibition conditions

1. When detection by the rack feed detection sensor (S16) is not possible
2. When (S11) and (S14) have not been detected before the start of operation

3. Transfer from the sample aspiration position to the CC unit

The belt operates twice according to the construction of the CG unit.

First operation

- The ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for 32 P in CW direction facing the motor shaft.
  (Operation pulse rate: 300 pps, cam rotation speed: 562.5°/s, cam rotation angle: 60°)
- The CB belt feed motor (M2) operates for 19 P in CCW direction facing the motor shaft.
  (Operation pulse rate: 190 pps, rack movement speed: 31 mm/sec)

Second operation

- The ID pawl feed motor (M4) and the sample pawl feed motor (M5) operate for 32 P in CW direction facing the motor shaft.
  (The alarm 3 is generated when (S11) and (S14) are not detected even after the max. movement of 150 P.)
- From 0.2 s before start of operation of the ID pawl feed motor, the CB belt feed motor (M2) operates for 1462 P (required movement distance: 178.4 mm) in CCW direction facing the motor shaft.
- Tube presence detection and sample ID reading are performed after completion of pitch feed operation.

Rack feed operation prohibition conditions

1. When detection by the rack feed detection sensor (S16) is not possible
2. When the CC rack feed origin sensor (S103) has not been detected before the start of operation
3. When the CC rack arrival sensor (S101) has been detected before the start of operation
4. When (S11) and (S14) have not been detected before the start of operation
5. When (S105) has been detected before the start of operation

Alarm types

1. Alarm 1

   Movement has been made to MEASURE2 in spite of automatic rerun. In this case, direct restart is not possible. Remove the alarm cause after the equipment operation has ended and then start the equipment.

2. Alarm 2

   With automatic rerun: PULSE (operation start by removing the respective rack and canceling PULSE)
   Without automatic rerun: MEASURE2 (restart after removing the respective rack)

3. Alarm 3

   Movement to MEASURE2. In this case, direct restart is not possible.

4. Alarm 4

   Only alarm. Analysis operation is continued.

■ CC unit view

● Front view

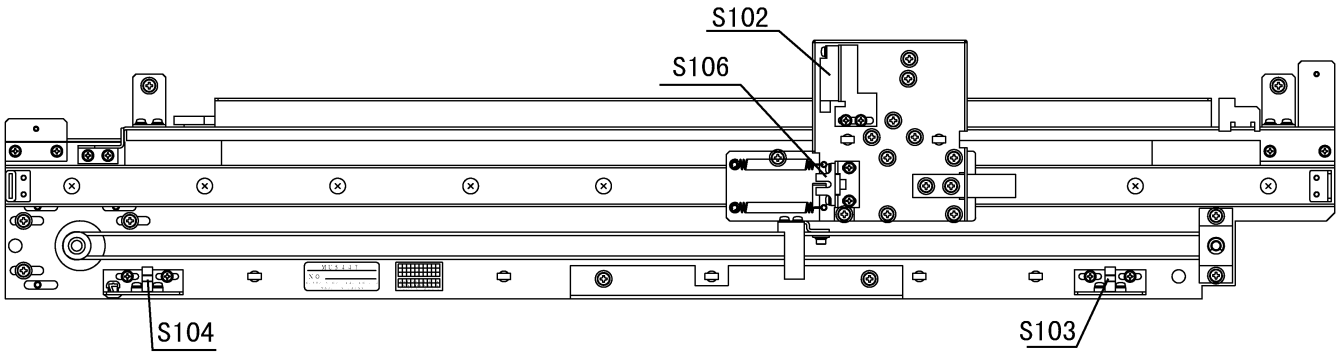


Fig 1

● Top view

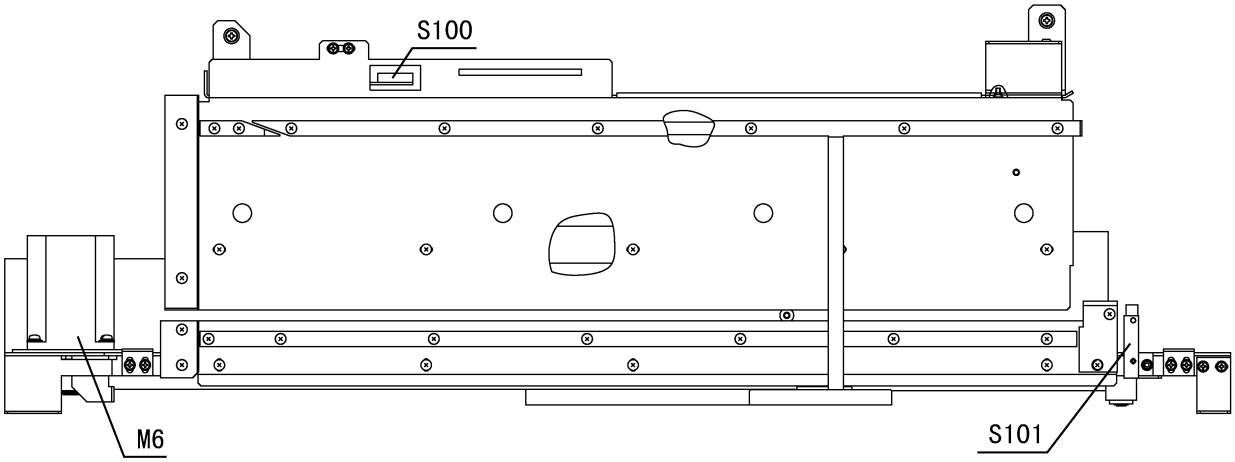


Fig 2

■ Operation Explanations for the CC Unit

Initialization operation

The following checks are performed before the start of operation, and the alarm 3 is generated in case of operation prohibition status.

- When the CC rack arrival sensor (S101) has been detected
- When the CC pre-rack detection sensor (S102) has been detected
- When the CC shaft lower position sensor (S105) has not been detected
- When the CC cover open sensor (S100) has not been detected
- When the CD rack feed origin sensor (S107) has not been detected
- When the CD rack arrival detection sensor (S111) has been detected

1. When the CC rack feed origin sensor (S103) is detected

1.1. Movement away from the origin

- The CC rack send motor (M6) operates for max. 500 P in CCW direction facing the motor shaft. (Acceleration/deceleration operation: High-speed pulse rate 1000 pps, low-speed pulse rate 400 pps, acceleration/deceleration pulse number: 10 P, rack movement amount: 30 mm)
- Immediate stop is performed when the CC pre-rack detection sensor (S102) is detected during the operation. Afterwards, the alarm 3 is generated.
- The alarm 3 is generated when the CC rack feed origin sensor (S103) is detected after completion of the operation.
- The CC rack send motor (M6) operates for max. 800 P in CW direction facing the motor shaft. Deceleration and stop are performed when the CC pre-rack detection sensor (S102) is detected during the operation.
  (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 1000 pps, acceleration/deceleration pulse number: 10 P, rack movement amount: 48 mm)
- The CC rack support solenoid (M13) becomes ON for 1 s. During this time, it is confirmed that (S105) is not detected, and the alarm 3 is generated in case of detection.

1.2. Rack presence check

- The CC rack send motor (M6) operates for max. 9566 P in CCW direction facing the motor shaft. (Acceleration/deceleration operation: High-speed pulse rate 1000 pps, low-speed pulse rate 400 pps, acceleration/deceleration pulse number: 10 P, rack movement amount: 547 mm)
- Immediate stop is performed when the CC pre-rack detection sensor (S102) is detected during the operation. Afterwards, the alarm 3 is generated.
- The CC rack send motor (M6) operates for max 940 P in CCW direction facing the motor shaft. (Acceleration/deceleration operation: High-speed pulse rate 1000 pps, low-speed pulse rate 400 pps, acceleration/deceleration pulse number: 10 P, rack movement amount: 56.4 mm)
- Immediate stop is performed when the CC pre-rack detection sensor (S102) is detected during the operation.
- Afterwards, the CC rack send motor (M6) operates for max. 600 P in CCW direction facing the motor shaft.
  (Constant speed operation, pulse rate: 200 pps, rack movement amount: 36 mm)

- Immediate stop is performed when the CC rack feed position sensor (S104) is detected during the operation. Then feed is performed for another 20 P.
- The alarm 3 is generated when the CC rack feed position sensor (S104) could not be detected until the end of the operation.
- The CC rack send motor (M6) operates for max. 10500 P in CW direction facing the motor shaft. (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 1000 pps, acceleration/deceleration pulse number: 50 P, rack movement amount: 630 mm)
- Deceleration and stop are performed when the CC rack feed origin sensor (S103) is detected.

2. When the CC rack feed origin sensor (S103) is not detected

2.1. Movement away from the origin

- The CC rack send motor (M6) operates for max. 10500 P in CW direction facing the motor shaft. (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 1000 pps, acceleration/deceleration pulse number: 50 P, rack movement amount: 630 mm)
- The alarm 3 is generated when the CC rack feed origin sensor (S103) is not detected until the end of the operation.
- Deceleration and stop are performed when the CC rack feed origin sensor (S103) is detected.
- The CC rack support solenoid (M13) becomes ON for 1 s. At this time, it is confirmed that (S105) has not been detected, and the alarm 3 is generated if it has been detected.

Rack feed operation

1. Rack reception operation from the CB unit

- Normally the rack transport lever is stopped at the side of the CD unit (except for the first rack reception).
- In the cycle directly before the rack is discharged from the CB unit, the CC rack send motor (M6) operates for max. 10500 P in CW direction facing the motor shaft. Deceleration and stop are performed when the CC rack feed origin sensor (S103) is detected.
  (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 1000 pps, acceleration/deceleration pulse number: 50 P, rack movement amount: 630 mm)
- The CC rack support solenoid (M13) becomes ON. The alarm 3 is generated when (S105) has been detected.

Rack feed operation prohibition conditions

1. When the CC rack arrival sensor (S101) has been detected

2. Transfer from the rack reception position to the position for handing the rack over to the rerun line
   - The CC rack send motor (M6) operates for max. 10500 P in CW direction facing the motor shaft. (Acceleration/deceleration pulse rate: High-speed pulse rate 1000 pps, low-speed pulse rate 400 pps, acceleration/deceleration pulse number: 10 P, rack movement amount: 630 mm)
   - The alarm 3 is generated when the CC pre-rack detection sensor (S102) has not been detected until the end of the operation.
   - Immediate stop is performed when the CC pre-rack detection sensor (S102) is detected during the operation.
   - The CC rack support solenoid (M13) becomes OFF.
   - (S105) is detected. The alarm 3 is generated when (S105) is not detected.
   - The CC rack send motor (M6) operates for max. 500 P in CCW direction facing the motor shaft. (Constant speed operation, pulse rate: 200 pps, rack movement speed: 60 mm/s, rack movement amount: 30 mm)
   - The alarm 3 is generated when the CC rack push position sensor (S106) is detected after completion of the operation.
   - Immediate stop is performed when the CC rack push position sensor (S106) is no longer detected during the operation, and then stop is performed after feed for another 20 P.
   - The CC rack send motor (M6) operates for 140 P in CW direction facing the motor shaft. (Operation pulse rate: 1000 pps, rack movement speed: 60 mm/s, rack movement amount: 8.1 mm)
   - The alarm 3 is generated when the CD rack arrival detection sensor (S111) is not detected after completion of the operation.

Rerun rack feed operation prohibition conditions

1. When the CC rack arrival detection sensor has not been detected
2. When the CC cover open sensor has not been detected

Alarm types

1. Alarm 1

   Movement has been made to MEASURE2 in spite of automatic rerun. In this case, direct restart is not possible. Remove the alarm cause after the equipment operation has ended and then start the equipment.

2. Alarm 2

   With automatic rerun: PULSE (operation start by removing the respective rack and canceling PULSE)
   Without automatic rerun: MEASURE2 (restart after removing the respective rack)

3. Alarm 3

   Movement to MEASURE2. In this case, direct restart is not possible.

4. Alarm 4

   Only alarm. Analysis operation is continued.

■ CD unit view

● Front view

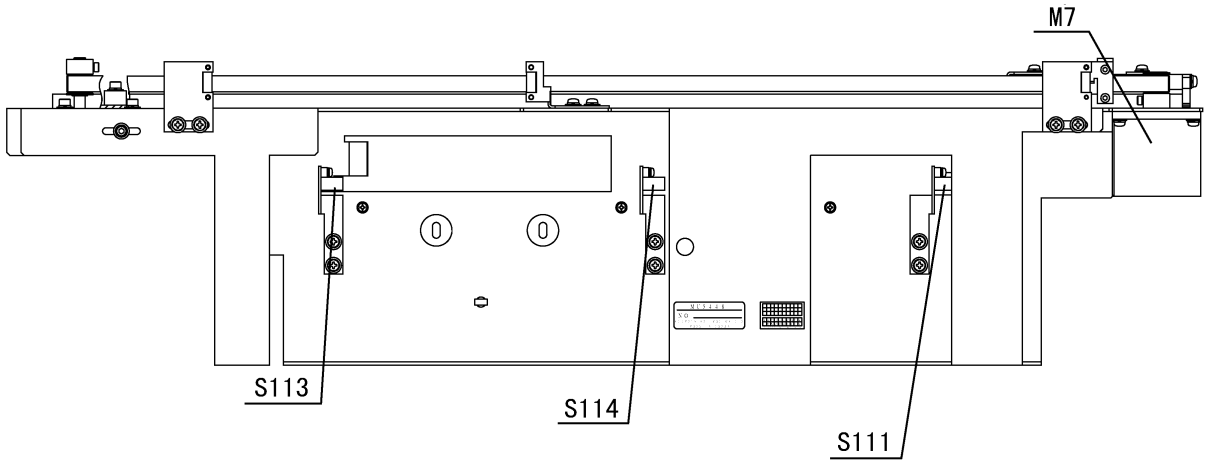


Fig 1

● Top view

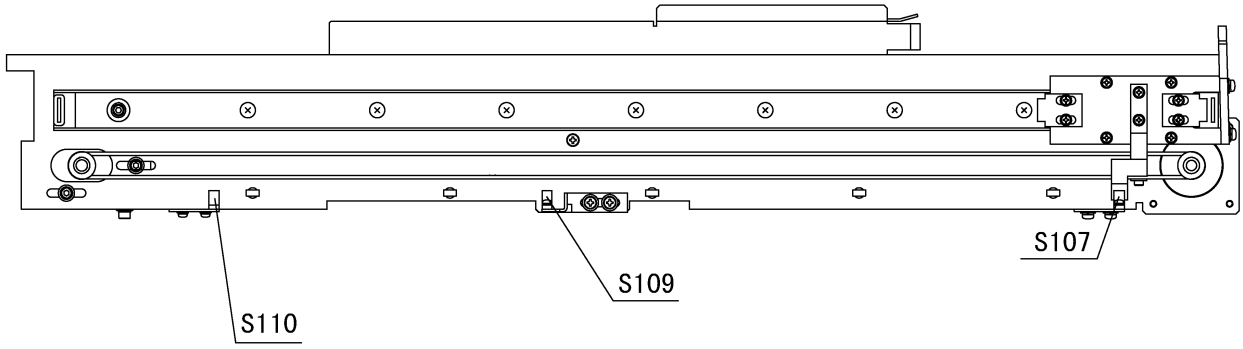


Fig 2

■ Operation Explanations for the CD Unit

Initialization operation

The following checks are performed before the start of operation, and an error is generated in case of an operation prohibition status.

- When the CD rack arrival detection sensor (S111) has been detected
- When the CD retrieval rack pass sensor (S114) has been detected
- When the CD repeat run rack pass sensor (S113) has been detected
- When the CE rack wait position sensor (S24) has not been detected
- When the CA repeat run arrival sensor (S112) has been detected

1. When the CD rack feed origin sensor (S107) has been detected

1.1. Movement away from the origin

- The CD rack send motor (M7) operates for max. 500 P in CW direction facing the motor shaft.
  (Fixed speed operation, pulse rate: 1000 pps, rack movement speed: 60 m/s, rack movement amount: 30 mm)
- The alarm 3 is generated when the CD rack feed origin sensor (S107) is detected after completion of the operation.
- The CD rack send motor (M7) operates for max. 800 P in CCW direction facing the motor shaft.
- Immediate stop is performed when the CD rack feed origin sensor (S107) is detected during the operation, and then stop is performed after feed for another 50 P.
  (Fixed speed operation, pulse rate: 1000 pps, rack movement speed: 60 m/s, rack movement amount: 48 mm)

2. When the CD rack feed origin sensor (S107) has not been detected

2.1. Movement away from the origin

- The CD rack send motor (M7) operates for max. 10000 P in CW direction facing the motor shaft.
  (Fixed speed operation, pulse rate: 1000 pps, rack movement speed: 60 m/s, rack movement amount: 600 mm)
- The alarm 3 is generated when the CD rack feed origin sensor (S107) could not be detected after completion of the operation.
- Immediate stop is performed when the CD rack feed origin sensor (S107) is detected during the operation, and then stop is performed after feed for another 50 P.
  (Fixed speed operation, pulse rate: 1000 pps, rack movement speed: 60 m/s, rack movement amount: 30 mm)

Rack feed operation

1. Rack feed from the origin position to the rack retrieval position

- After the rack has been detected by the CD rack arrival detection sensor (S111), it is confirmed that the CE unit is at the wait position. (Details are given in the operation explanations for the CE unit.)
- The CD rack send motor (M7) rotates for 5905 P (movement distance: 354.3 mm) in CW direction facing the motor shaft and feeds the rack to the retrieval position.
  (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 100 pps, acceleration/deceleration pulse number: 1000 P)
- The alarm 3 is generated when the CD rack retrieval position sensor (S109) is not detected after completion of the operation.

- After completion of the operation, detection of the CD retrieval rack pass sensor (S114) and the CD repeat run rack pass sensor (S113) is checked. The alarm 3 is generated in case of sensor detection.
- The CE unit retrieves the rack in the CH unit.
- After completion of retrieval operation, the CD rack send motor (M7) operates for 5905 P in CCW direction facing the motor shaft.
  (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 500 pps, acceleration/deceleration pulse number: 50 P, rack movement amount: 354.3 mm)
- The alarm 3 is generated when the CD rack feed origin sensor (S107) can not be detected after completion of the operation.

Rerun rack feed operation prohibition conditions

1. When the CD repeat run rack pass sensor (S113) is detected before the start of operation
2. When the CE rack wait position sensor (S24) is not detected before the start of operation
3. When the rack full sensor (S26) is detected before the start of operation
4. When the CD retrieval rack pass sensor (S114) is detected before the start of operation

2. Transfer from the origin position to the CA unit

(Transfer method when there is a rerun sample in the rack at the time of automatic rerun)

- The rack is detected by the CD rack arrival detection sensor (S111), and rerun is confirmed for the detected rack.
- It is confirmed that the CE unit is at the wait position.
- The CD rack send motor (M7) operates for max. 10000 P in CW direction facing the motor shaft.
- Deceleration and stop are performed when the CD rack repeat position sensor (S110) is detected during the operation.
  (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 500 pps, acceleration/deceleration pulse number: 50 P, rack operation amount: 600 mm)
- The alarm 3 is generated when the CD repeat run rack pass sensor (S113) is detected after completion of the operation.
- The alarm 3 is generated when the CA repeat run arrival sensor (S112) is not detected after completion of the operation.
- The CD rack send motor (M7) operates in CCW direction facing the motor shaft.
  (The number of operation pulses is the counted number of pulses operated in CW direction.)
  (Acceleration/deceleration operation: High-speed pulse rate 2500 pps, low-speed pulse rate 500 pps, acceleration/deceleration pulse number: 50 P)
- The alarm 3 is generated when the CD rack feed origin sensor (S107) is not detected after completion of the operation.

Rerun rack feed operation prohibition conditions

1. When the CD repeat run rack pass sensor (S113) has been detected before the start of the operation
2. When the CE rack wait position sensor (S24) has not been detected before the start of the operation
3. When the CA receptacle pitch sensor (S2) has not been detected before the start of the operation
4. When the CA repeat run arrival sensor (S112) has been detected before the start of the operation

Alarm types

1. Alarm 1

   Movement has been made to MEASURE2 in spite of automatic rerun. In this case, direct restart is not possible. Remove the alarm cause after the equipment operation has ended and then start the equipment.

2. Alarm 2

   With automatic rerun: PULSE (operation start by removing the respective rack and canceling PULSE)
   Without automatic rerun: MEASURE2 (restart after removing the respective rack)

3. Alarm 3

   Movement to MEASURE2. In this case, direct restart is not possible.

4. Alarm 4

   Only alarm. Analysis operation is continued.

■ CE unit view

● Front view

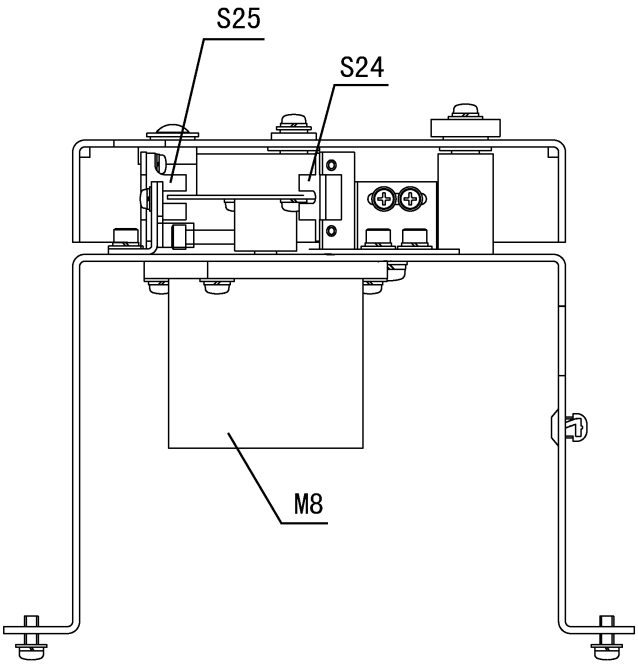


Fig 1

● Top view

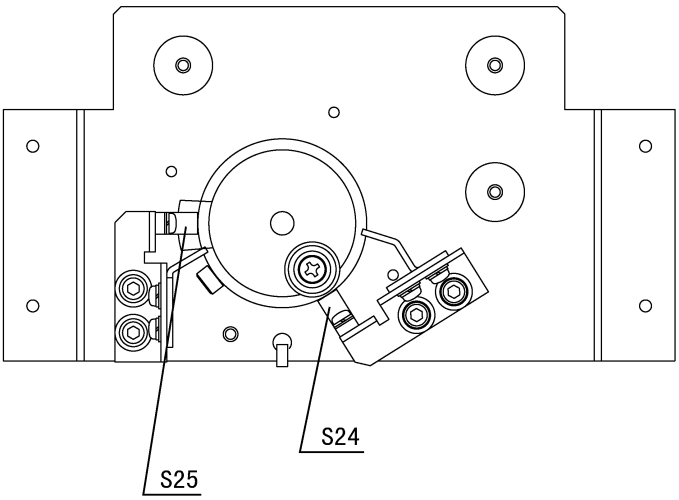


Fig 2

■ CH unit view

● Front view

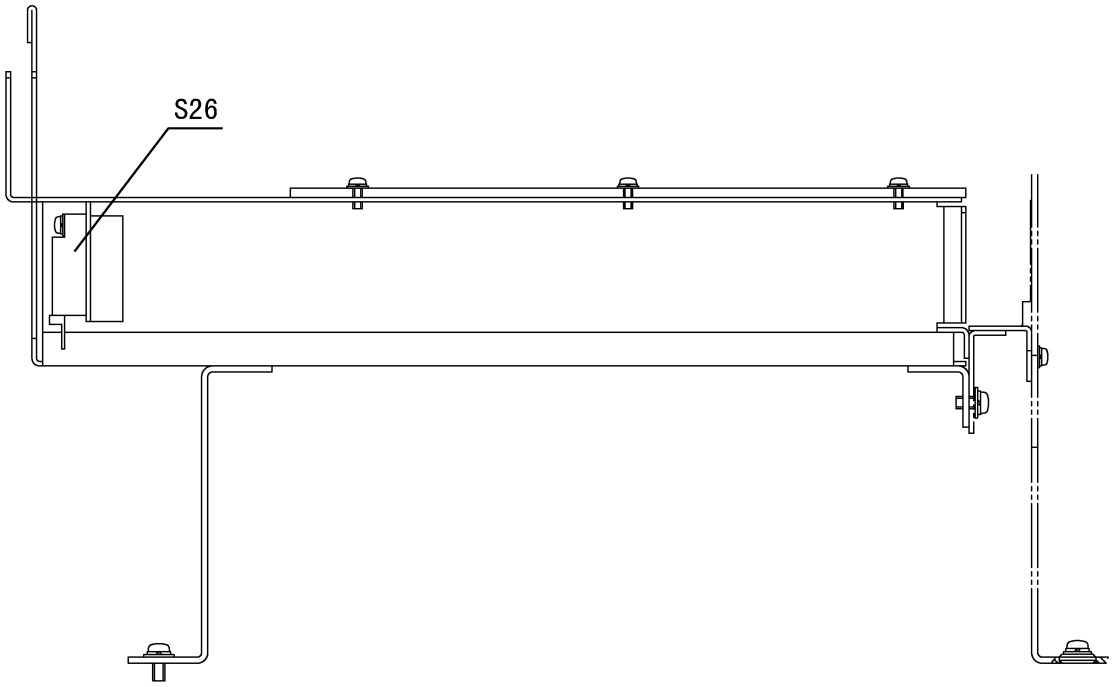


Fig 3

● Top view

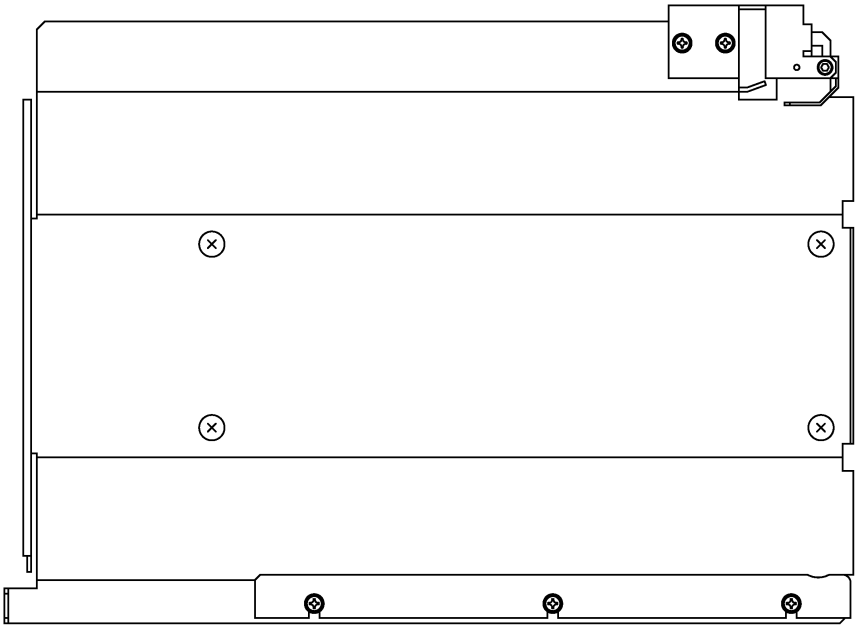


Fig 4

■ Operation Explanations for the CE and the CH Unit

Initialization operation

1. Movement away from the origin
   - The CE rack push motor (M8) operates for max. 800 P in CW direction.
   - When the CE rack wait position sensor (S24) is detected during the operation, stop is performed after further feed for 13 P.
     (Operation pulse rate: 300 pps, rack movement speed: 30 mm/sec)
   - Next, the CE rack push motor (M8) operates for 260 P in CCW direction.

Rack retrieval operation

1. Transfer from the rack retrieval position to the CH unit (in case of rerun)
   - The presence of a rack at the rack standby position is detected by the CD retrieval rack pass sensor (S114), and when a rack is present, the CE rack push motor (M8) rotates for 260 P in CW direction.
     (Operation pulse rate: 300 pps, rack movement speed: 30 mm/sec, feed lever movement amount: 25 mm (260 P))
   - The alarm 3 is generated when the CE rack wait position sensor is not detected after the operation.
   - The CD rack send motor (M7) operates and transfers the rack to the return point of the CA unit. After rack passage, the CE rack push motor (M8) of the CE unit rotates for 260 P in CCW direction facing the motor shaft.
     (Operation pulse rate: 300 pps, rack movement speed: 30 mm/sec, feed lever movement amount: 25 mm (260 P))
   - The alarm 3 is generated when the CE rack wait position sensor (S24) is not detected after the operation.

2. Transfer from the rack retrieval position to the CH unit (in case of no rerun)

- The presence of a rack at the rack standby position is detected by the CD retrieval rack pass sensor (S114), and when a rack is present, the CE rack push motor (M8) rotates for 260 P in CW direction.
  (Operation pulse rate: 300 pps, rack movement speed: 30 mm/sec, feed lever movement amount: 25 mm (260 P))
- The alarm 3 is generated when the CE rack wait position sensor is not detected after the operation.
- The CD rack send motor (M7) operates, and the rack is stopped in front of the CE unit. After rack stop, the CE rack push motor (M8) rotates for 260 P in CCW direction facing the motor shaft.
  (Operation pulse rate: 300 pps, rack movement speed: 30 mm/sec, feed lever movement amount: 25 mm (260 P))
- The alarm 3 is generated when the CE rack wait position sensor (S24) is not detected after the operation.

Rack retrieval operation prohibition conditions

1. When the rack full sensor (S26) has been detected before the start of the operation
2. When the CD retrieval rack pass sensor (S114) has been detected before the start of the operation
3. When the CD repeat run rack pass sensor (S113) has been detected before the start of the operation

Alarm types

1. Alarm 1

   Movement has been made to MEASURE2 in spite of automatic rerun. In this case, direct restart is not possible. Remove the alarm cause after the equipment operation has ended and then start the equipment.

2. Alarm 2

   With automatic rerun: PULSE (operation start by removing the respective rack and canceling PULSE)
   Without automatic rerun: MEASURE2 (restart after removing the respective rack)

3. Alarm 3

   Movement to MEASURE2. In this case, direct restart is not possible.

4. Alarm 4

   Only alarm. Analysis operation is continued.

■ Operation Explanations for the DA Unit

Initialization operation

1. When the origin sensor has not been detected
   - The reagent tray is rotated by 600 pps in CCW direction.
   - After detection of the disk notch by the origin sensor, stop is performed after rotation by 20 P.
2. When the origin sensor has been detected
   - The reagent tray is rotated by 100 P in CW direction, so that the origin sensor becomes OFF.
   - The reagent tray is rotated by 600 pps in CCW direction.
   - After detection of the disk notch by the origin sensor, stop is performed after rotation by 20 P.

Reagent ID check operation

The reagent ID check is performed at the time of equipment start and at the time of reagent check execution.
The window for reagent ID reading is heated by a heater to prevent condensation.

- The reagent tray is rotated in CW direction.
- The presence of a reagent bottle is detected by the R1 bottle detection sensor.
- When a bottle is detected, the bar code reader emits light for 1 sec.
- 0.4 sec after light emission, the reagent tray is rotated by 70 pulses at 70 pps in CW direction, and moving reading is performed for 0.6 sec.
- Rotation in CW direction is performed by 125 pulses at 600 pps in CW direction, and movement is made to the next bottle.

Analysis operation

Following the information of the analysis items, the respective reagent bottle is transferred to the reagent aspiration position. At this time, rotation is performed in the direction resulting in the shortest distance. When the respective reagent bottle has been transferred to the reagent aspiration position, reagent aspiration operation is started when the stop position sensor has detected the notch.

Reagent refrigerator operation

Coolant cooled by the refrigeration unit (M521-DB01) using a Peltier element is circulated by the reagent compartment cooling liquid circulation pump (P8) and cools the inside of the DA unit.
The temperature of the coolant is detected by the thermistor installed in the DA01 unit, and this temperature is used for proportional control of the refrigeration unit.
Reagent cooling temperature: 4 to 12°C (ambient temperature: 18 to 32°C)

■ Explanation of the DA Unit Mechanisms

Rotation mechanism

The reagent tray (6) rotates together with the rotation shaft (12). This rotation shaft (12) is driven by the pulse motor (1) installed on the base plate via the gear (3). The bearing (5) is installed on the base, and when the pulse motor (1) rotates, only the rotation shaft (12) and the reagent tray (6) rotate.

Each stop position is decided by the number of pulses from the origin position. The notch in the disk (4) installed on the gear (3) is detected by the stop position sensor to confirm the respective stop position.

Bottle detection mechanism

Reagent bottle detection is performed by the transmission-type sensor (8) using the reagent ID read window. The sensor on the light emission side is fixed to the rotation shaft, and the sensor on the light reception side is fixed to the bar code reader mounting plate.

The reagent ID read window is heated by a heater to prevent condensation.

Reagent ID read mechanism

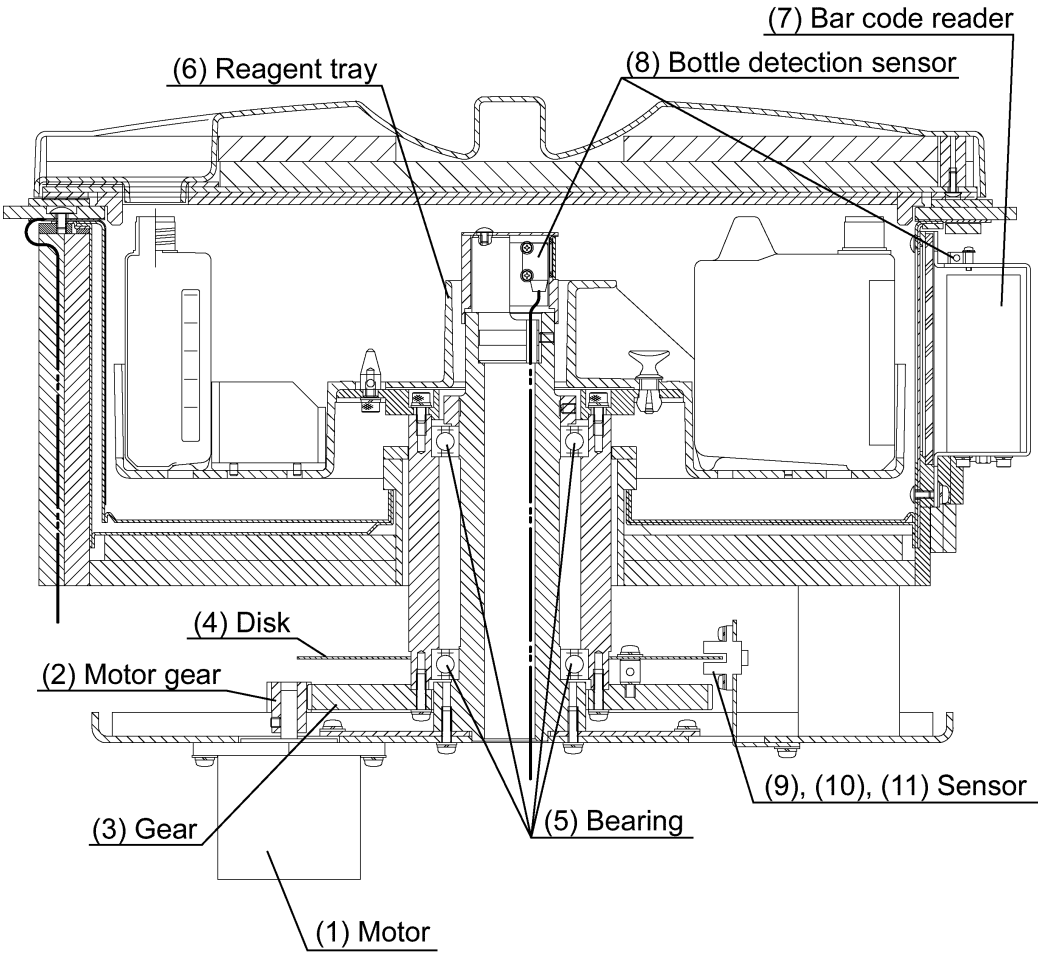
When the bottle has been detected by the bottle detection sensor (8), the bar code reader (7) is lit and the reagent ID is read.

First, the reagent tray is locked and stopped reading of the reagent ID is performed. After 0.4 sec, the reagent tray is rotated and moving reading of the reagent ID is performed. Stopped reading and moving reading of the reagent ID is performed to eliminate the influence from a dirty reagent ID label etc.

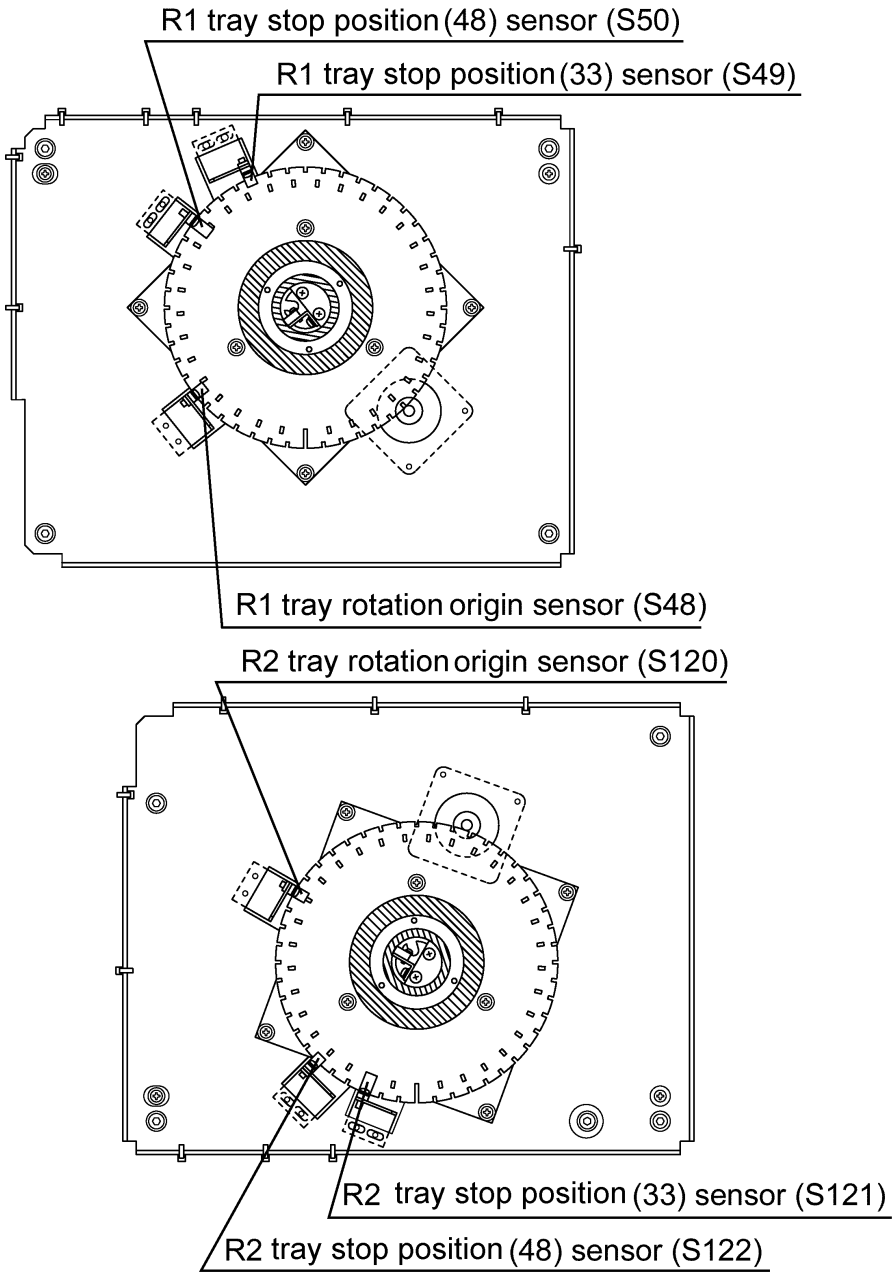
The reagent ID read window is heated by a heater to prevent condensation.

■ Schematic Diagram of the DA Unit

Cross section



Sensor layout


R1 tray stop position (48) sensor (S50)
R1 tray stop position (33) sensor (S49)
R1 tray rotation origin sensor (S48)
R2 tray rotation origin sensor (S120)
R2 tray stop position (33) sensor (S121)
R2 tray stop position (48) sensor (S122)

■ Operation Explanations for the DC Unit

Initialization operation

- The STAT table is rotated for 9 tubes in CCW direction to bring all sample tubes into contact with the brush for removal of static electricity.
- When the origin sensor is ON at the time of start, the STAT table is moved by 200 pulses in CW direction, so that the origin sensor becomes OFF.
- The STAT table rotates in CCW direction with fixed speed and stops when the origin sensor becomes ON.
- Then the STAT table is rotated for another 14 pulses in CCW direction and stops.

Sample ID reading operation

- At the time of start, it is confirmed that the stop position sensor is ON, and then the bar code reader emits light for 1 sec. At the same time, the presence of a sample tube is detected.
- 0.3 sec after the start of light emission, the STAT table is rotated for 49 pulses at 80 pps in CCW direction, and moving reading is performed for 0.7 sec.
- The STAT table is rotated in CCW direction and moves to the next position.

Analysis operation

- After confirmation that the stop position sensor is ON, the STAT table is rotated in CCW direction.
- Stop of the respective sample tube at the aspiration position is detected with the stop position sensor.
- Aspiration operation is started when the stop position sensor is ON.

Table rotation operation

- When the STAT ROT/DIAG switch is pressed, the STAT table rotates 72° in CCW direction. (The table returns to its original position when the switch is pressed five times.)
- After stop, the motor energization is cut.

Refrigerated sampler refrigeration operation

The coolant cooled by the refrigeration unit (M521-DD01) using a Peltier element is circulated by the STAT cooling liquid circulation pump (P9), and the inside of the DC unit is cooled.

The temperature of the coolant is detected by the thermistor installed in the DC unit, and this temperature is used for proportional control of the refrigeration unit.

When the temperature in the DC unit is outside the range from 4 to 12°C, an alarm is generated on the DPR.

The temperature in the DC unit is not displayed on the DPR (only alarm generation).

STAT (switches, LEDs)

1. SET LED

This LED indicates that the table is not turning automatically, but is in the condition where the user can set samples to the table.

Status	Explanation
Lit	Sample setting is possible.
Flashing	Transition between sample setting possible and not possible (indication for confirmation that the STAT switch has been pressed and that this has been accepted)
Not lit	Sample setting is not possible.

2. END LED

This LED indicates that sample aspiration has been completed for the STAT samples on the table.

Status	Explanation
Lit	Sample aspiration has been completed for the STAT samples on the table.
Not lit	Sample aspiration has not been completed for the STAT samples on the table. (Insertion or removal of STAT samples on the table is not possible.)

3. STAT switch

This switch is pressed to change from sample setting not possible to sample setting possible, to change from sample setting possible to sample setting not possible, and to start STAT measuring.

This is a simple push switch, and it has no built-in LED.

4. STAT ROT switch

This switch is pressed to rotate the table for the specified angle for sample setting at a desired position. This switch is accepted only while the STAT LED is lit.

This is a simple push switch, and it has no built-in LED.

(This switch also is used as the DIAG, ISE priming switch.)

STAT measuring

	Operation procedure	SET LED	END LED
		Not lit	Lit
1	Press the STAT switch. (Note 1)	Flashing	↑
	(Wait until sample aspiration has been completed for samples with R1 dispensing completed.)	↑	↑
2	Confirm that the SET LED is lit.	Lit	↑
3	Open the small cover of the STAT section and remove any remaining samples on the table for which measuring has been completed. (Note 2) Note 3)	↑	(Note 3)
4	Set the STAT samples onto the table and set the small cover. (Note 2)	↑	↑
5	Press the STAT switch.	Flashing	Not lit
	(Reset, ID reading, and tube detection operation are performed.)	↑	↑
	(Start of STAT measuring) (Note 4), (Note 5)	Not lit	
	(Completion of STAT sample aspiration)	↑	Lit
	(STAT measuring completion)	↑	↑
	(Followed by measuring of the samples on the rack or QC, CAL) (Note 6)	↑	↑
6	The END LED lights, and completion of STAT sample measuring is confirmed.	↑	↑
7	Press the STAT switch. (Note 6)	Flashing	↑
	(Wait until sample aspiration has been completed for samples with R1 dispensing completed.)	↑	↑
8	Confirm that the SET LED is lit.	Lit	↑
9	Open the small cover of the STAT section and remove any remaining STAT samples on the table for which measuring has been completed.	↑	↑
10	Set the small cover.	↑	↑
11	Press the STAT switch.	Flashing	↑
	(Reset, ID reading, and tube detection operation are performed.)	↑	↑
	(As there are no STAT samples on the table, measuring of the samples on the rack, or QC, CAL is performed.)	Not lit	↑

(Note 1)

This is not accepted when manual operation using the STAT table (washing, ISE priming, etc.) is performed during standby. Wait until the manual operation has been completed.

As the SET LED is lit in normal standby status other than the above during standby, the operation starts from "2".

(Note 2)

At this time, the table can be turned by pressing the STAT ROT switch.

(Note 3)

When the END LED is lit, this indicates that STAT samples are being measured, and the STAT samples set on the table shall not be removed or switched to prevent sample errors.

(Note 4)

In case of STAT interruption during measuring operations for the samples on the STAT table (QC, A-CAL, etc.), or when the operation timing for such operations is reached during STAT, these are measured first, and then STAT measuring is performed.

(Note 5)

Analysis of the STAT samples set on the STAT table is performed in the order of the position numbers.

(Note 6)

When STAT measuring is performed from standby, the operation "7" is not required as the equipment returns to standby status after STAT measuring.

■ Explanation of the DC Unit Mechanisms

Turning mechanism

The table (5) on which the samples are set turns together with the shaft (4). This shaft (4) is turned by the pulse motor (1) installed on the base plate via the gear (3). The base has the bearing (7) installed, and when the motor rotates, only the shaft (4) and the table (5) turn.

Each stop position is decided by the number of pulses from the origin position. The notch in the disk (6) installed on the gear (3) is detected by the stop position sensor, and presence at each stop position is confirmed.

Cover mechanism

The cover of the DC unit is composed of two covers. The entire DC unit is covered by cover 1 and cover 2. Cover 1 has a magnet sensor installed, and cover opening is checked by a sensor. Cover 2 is located on cover 1, and sample setting during analysis is possible by removing only cover 2.

STAT table stop position

After initialization, the STAT table stops at the aspiration position "W1" at the inner circumference of the table. At this time, the first position on the outer circumference is at the set position when cover 2 is removed.

The angles between the tubes at the inner circumference are shown in the following table

	W1	W2	ISE CLEAN	S-H	S-L	U-H	U-L
Angle	32.7°	32.7°	65.5°	32.7°	32.7°	32.7°	

With rotation by 7.1° in CCW direction from the aspiration position on the inner circumference, the aspiration position on the outer circumference is reached. ID reading and tube detection are performed at the aspiration position on the outer circumference. 22 tubes are arranged on the outer circumference at intervals of 16.4°.

■ Schematic Drawing of the DC Unit

Cross section drawing

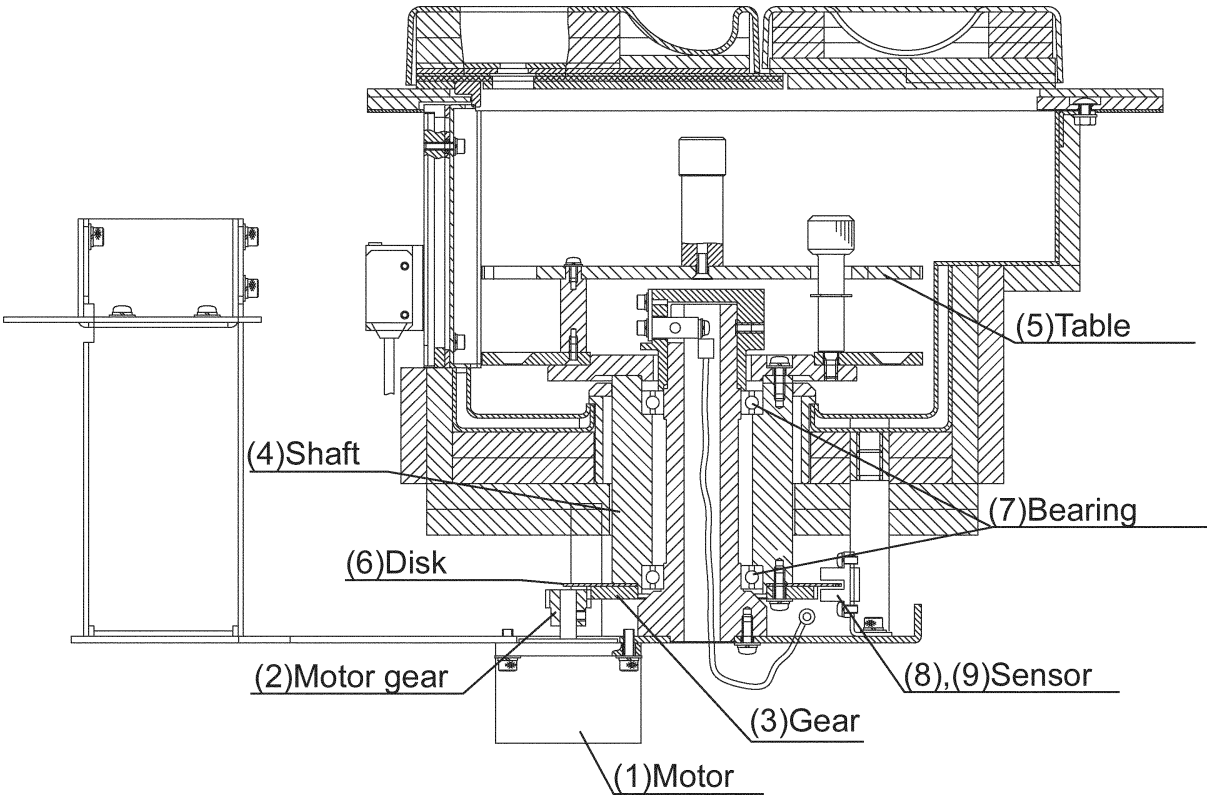


Fig 1

STAT table stop position

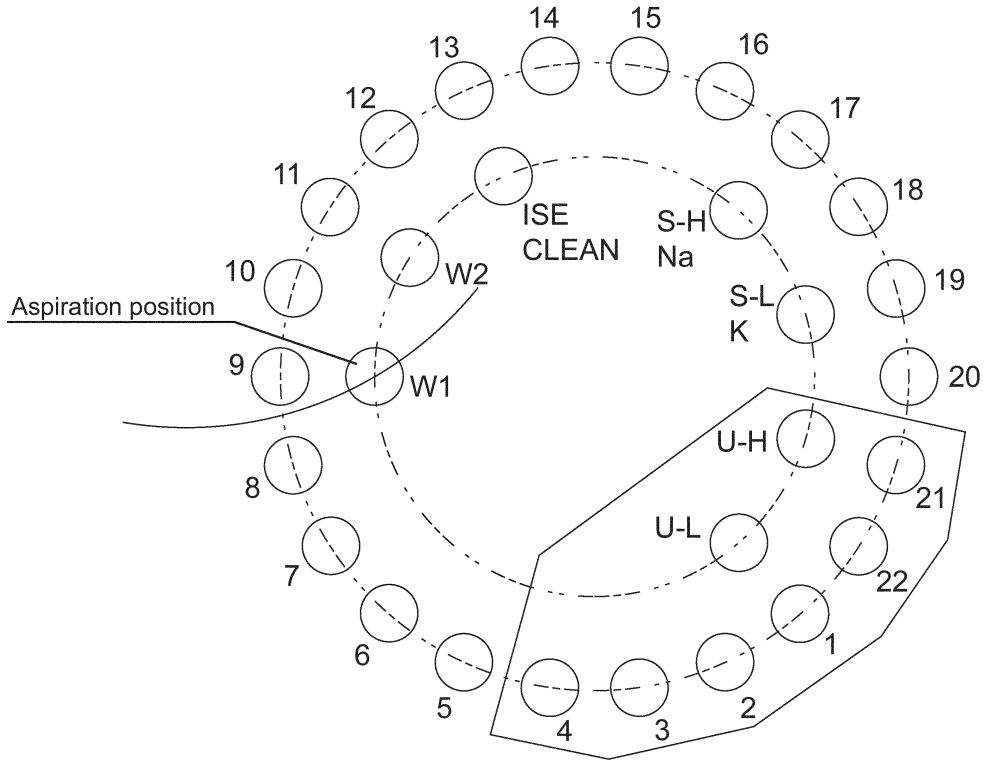


Fig. 2 Aspiration position at the inner circumference

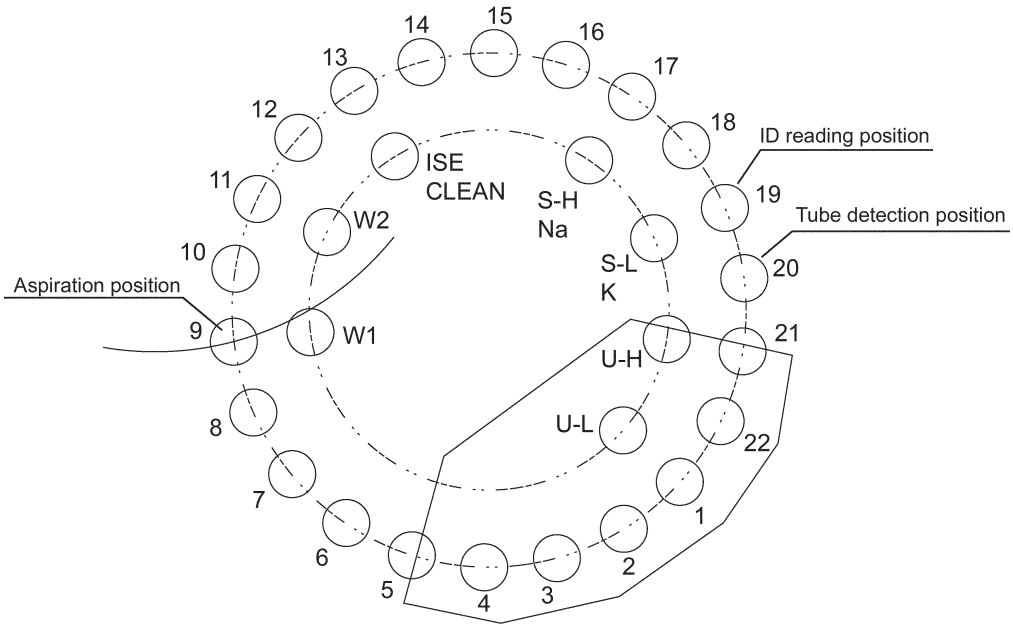


Fig. 3 Aspiration position at the outer circumference

■ Operation Explanations for the FA Unit

Initialization operation

1. Operation away from the upper position

When the sample probe upper position/origin sensor (S42) is detected at the start of initialization, descent for 150 P is performed after rotation initialization. (1000 pps)

2. Upper position origin operation

Rise is performed at 1000 pps, and after the sample probe upper position/origin sensor (S42) has become ON, stop is performed after rise for another 20 P.

3. Operation away from the rotation origin

When the S-probe rotation origin sensor (S33) is detected at the start of initialization, rotation in CW direction is performed for 200 P. (1000 pps)

4. Rotation origin operation

Rotation in CCW direction is performed at 1000 pps, and after the S-probe rotation origin sensor (S33) has become ON, stop is performed at the first phase origin.

5. Wash position rotation operation

Acceleration/deceleration operation in CW direction to the wash position

6. Wash position vertical movement

After descent for 432 P at the wash position, rise is performed at 1000 pps, and after the sample probe upper position/origin sensor (S42) has become ON, stop is performed after rise for another 20 P.

7. Liquid level detection check operation (only at the start of measuring operation)

Probe washing water (inside, outside) is discharged, the probe is lowered for 24 mm, and the operation of the sample liquid level detection sensor (S40) is confirmed. Afterwards, the probe rises to the middle position.

Dispensing sequence operation

- Descent from the wash position middle position to the wash position lower position
- Washing operation
- After rise for 2 mm during washing operation, rise to the wash position middle position is performed after a fixed time.
- When the Sample probe middle position sensor (S36) is ON, low speed rotation is performed to the sample aspiration position (rack, STAT).
  1. In case of the rack position
     When the Sample probe rotation stop position sensor (S34) is ON, descent is performed, and deceleration stop is performed after liquid level detection.
  2. In case of STAT, ISE STD position
     When the Sample probe rotation stop position sensor (S34) is ON and the STAT rotation stop position sensor (S30) is ON, descent is performed, and deceleration stop is performed after liquid level detection.
- Sample aspiration operation
- 8.3 mm (150 P) fixed speed rise (1600 pps - fixed speed)
- Dummy discharge operation
- Rise to the middle position (acceleration/deceleration operation)
- When the Sample probe middle position sensor (S36) is ON, turning to the sample discharge position (cuvette, ISE) (acceleration/deceleration operation).
  1. In case of the cuvette position
     When the Cuv wheel stop position sensor (S57) is ON and the Cuv wheel access prohibition signal is OFF, descent to the specified height.
  2. In case of the ISE position
     Descent when the Sample probe rotation stop position sensor (S34) is ON.
- Sample discharge operation
- Rise to the middle position (acceleration/deceleration operation)
- When the Sample probe middle position sensor (S36) is ON, turning to the wash position (general items: Acceleration/deceleration operation, ISE: Fixed speed operation).

Probe descent operation (cuvette position)

- The descent amount in the cuvette at the time of sample discharge changes in the range from 22 to 36 mm depending on the sample dispensing quantity.

■ Explanation of the FA Unit Mechanisms

Turning mechanism

The arm (3) is installed on the ball spline shaft (8). The ball spline shaft (8) is held by the spline bush (9), and it can move up and down freely, while rotation is restricted by the pulley (5). The pulley (5) is supported by bearings at the top and at the bottom, and even when belt tension is applied, there is no influence onto the movement of the ball spline shaft (8).

The ball spline shaft (8) is driven by the rotation motor (4) via the timing belt pulley. A five-phase pulse motor is used for the rotation motor (4), so that it can withstand high-speed rotation. The rotation stop position is decided by the number of pulses from the origin sensor. The stop position is confirmed by the rotation position sensor (1) and the sensor plate (2) with a notch in it.

There are two rotation position sensors, one for the cuvette position and one for other stop positions.

Vertical movement mechanism

The change nut (10) is installed on the vertical movement base (11), and the vertical movement base (11) moves up and down when the change screw (10) turns. The change screw (10) is connected to the vertical movement motor (14) via the coupling (13), and it is driven by the vertical movement motor (14). The vertical movement motor (14) is a two-phase pulse motor.

The ball spline shaft (8) is installed with a thrust bearing on the vertical movement base (11) so that it can rotate freely, and it moves up and down together with the vertical movement of the vertical movement base (11). In addition, the linear bush (9) is installed on the vertical movement base (11), and as it is guided by the linear shaft (12), the vertical movement base (11) can not become inclined during vertical movement because of play of the change nut (10).

The upper point of the probe is where the sensor plate (7) intersects the origin sensor (6).

Arm section

The arm (b) is made of aluminum, and the liquid level detection plate (e) is installed on the arm inside. The holder (l) made of stainless steel is installed on the arm via the insulator (j).

The crash detection sensor flag (g) is installed on the holder (l), and in case of crash of the S-probe (m), the crash detection sensor flag (g) is separated from the crash detection sensor.

The S-probe (m) is installed by inserting it into the holder (l) and using the rubber tube (d) with the T-holder (h) and the setscrew (i) to connect the piping and to fix the S-probe. At this time, the S-probe (m) and the holder (l) are connected electrically.

■ Schematic Diagram of the FA Unit

Front view of the FA unit

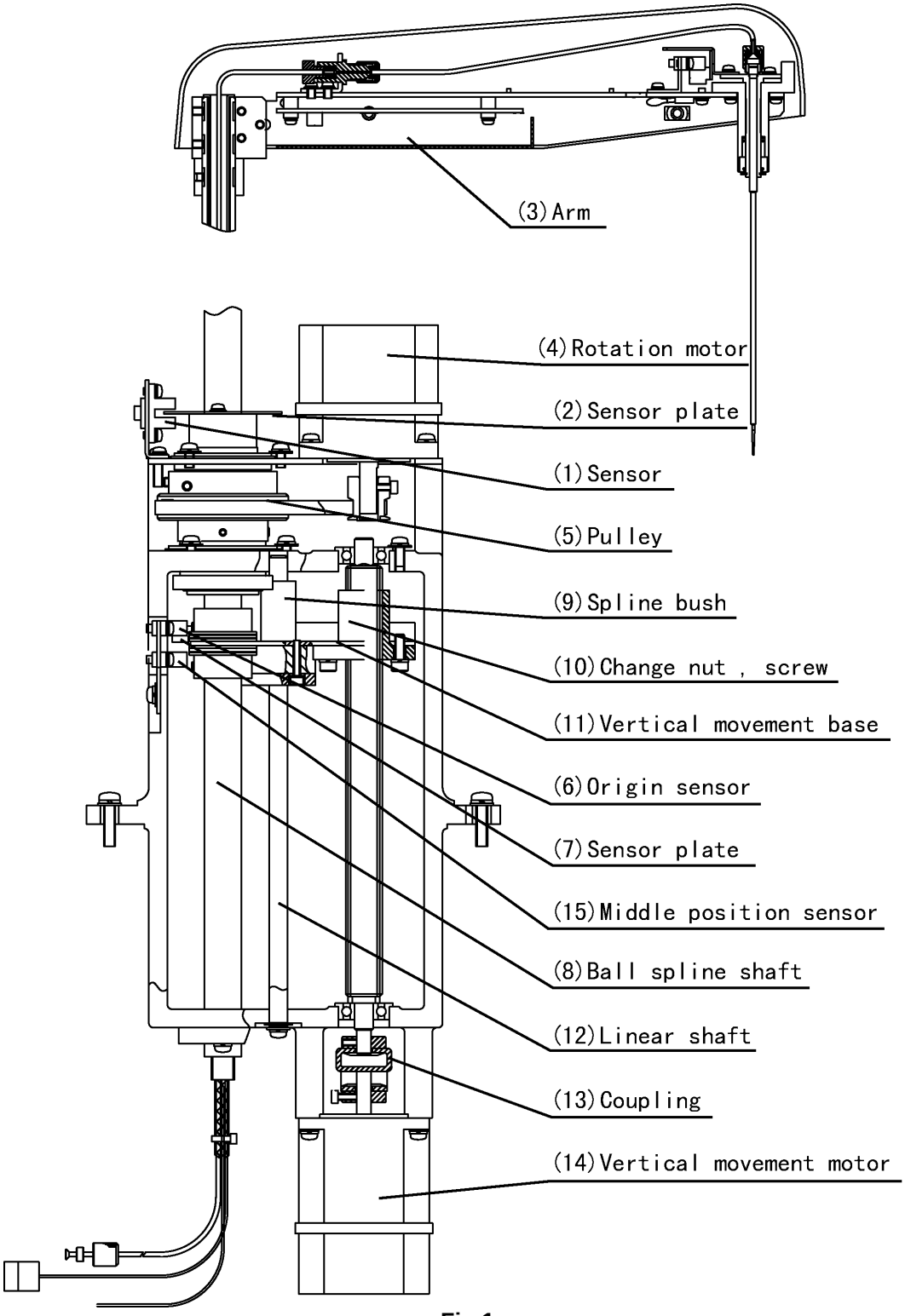
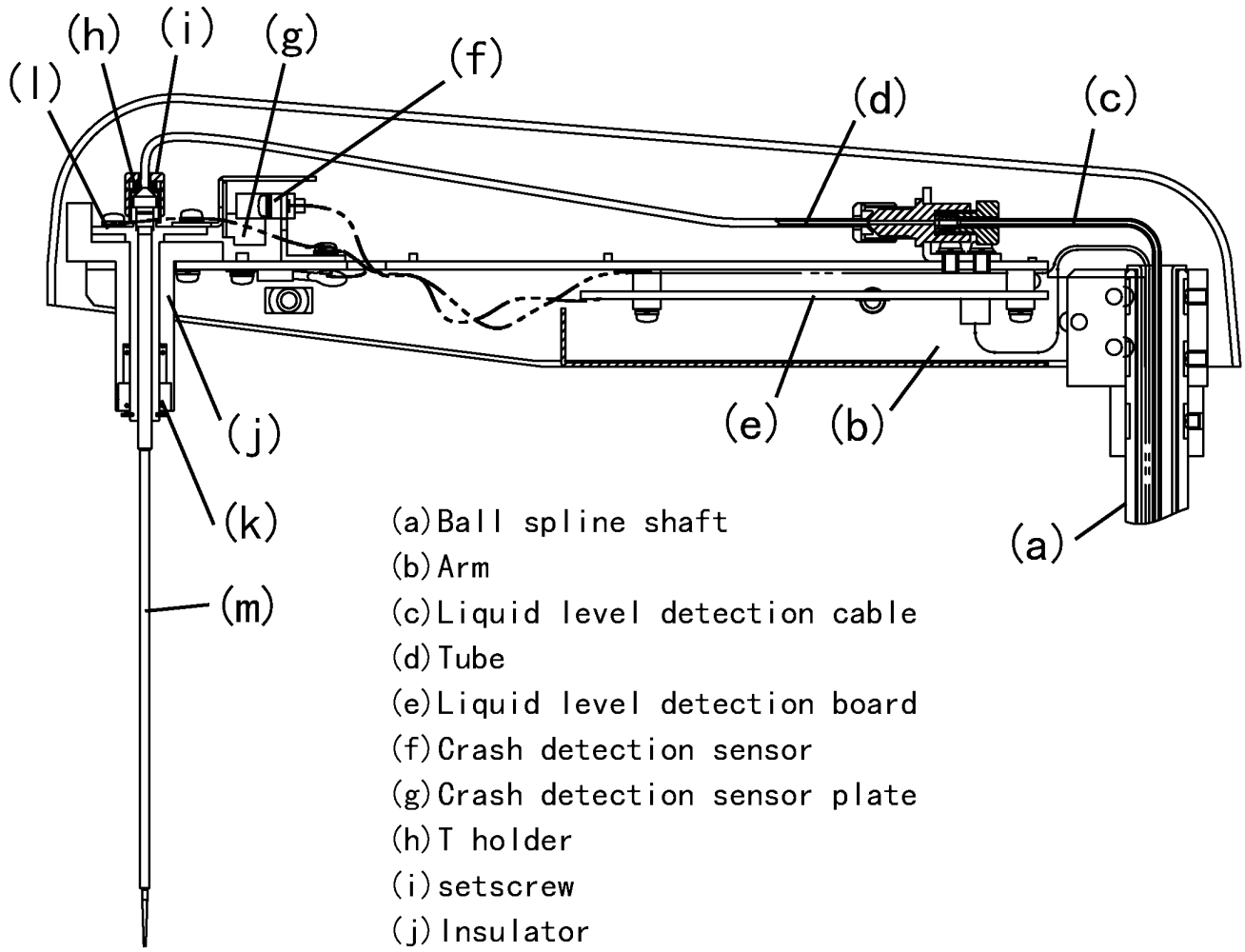


Fig 1

Side view of the Arm



(a) Ball spline shaft
(b) Arm
(c) Liquid level detection cable
(d) Tube
(e) Liquid level detection board
(f) Crash detection sensor
(g) Crash detection sensor plate
(h) T holder
(i) setscrew
(j) Insulator
(k) Spring
(l) Holder
(m) S probe

Fig 2

Top view of the rotation mechanism

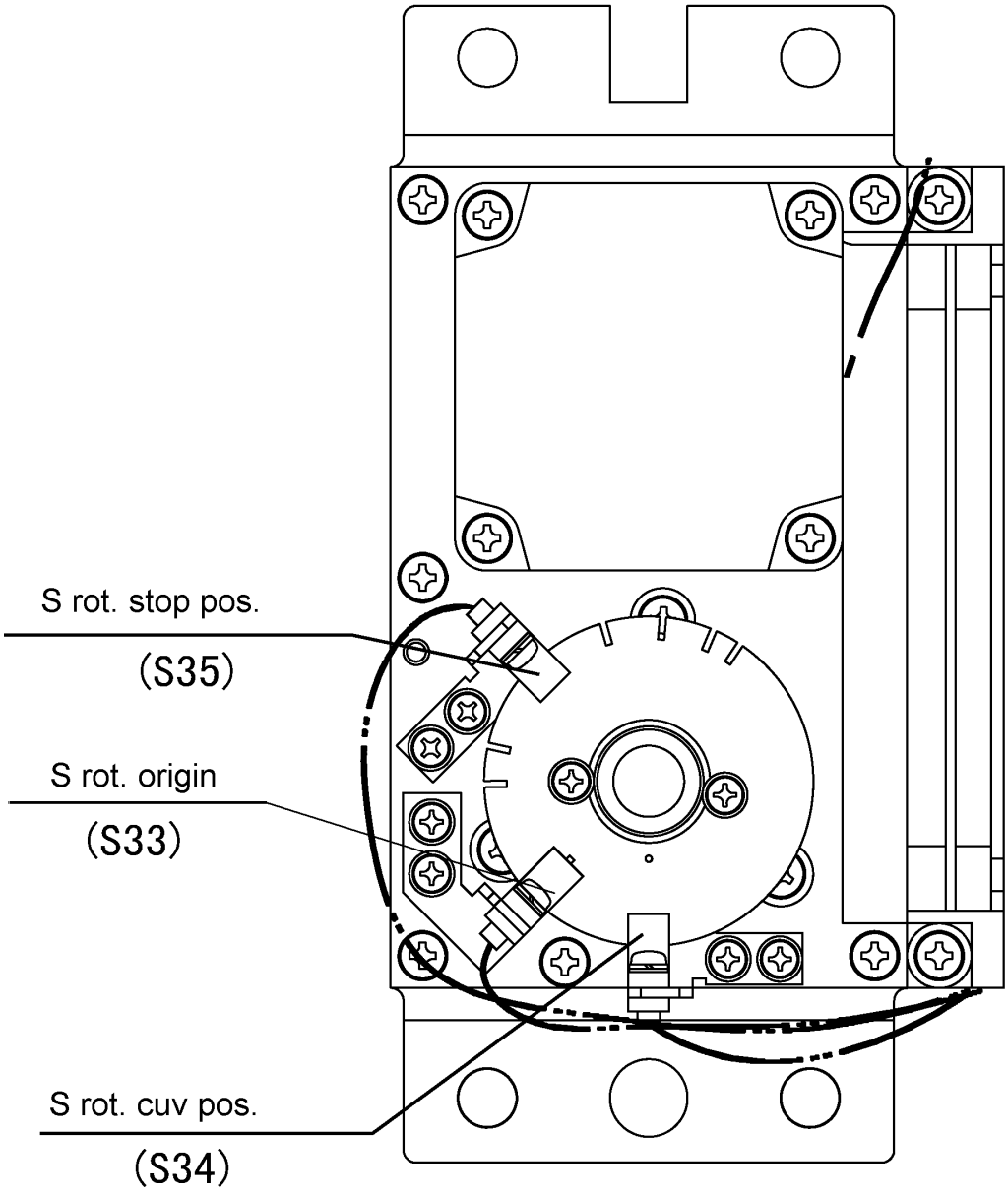


Fig 3

■ Operation Explanations for the FB Unit

Initialization operation

1. Movement away from the upper position

   When the Cuv wash nozzle upper position sensor (S61) is ON at the start of initialization, rotation for 400 P is performed in CCW direction. When the Cuv wash nozzle upper position sensor (S61) is ON after the rotation, an error is generated.

2. Upper position origin operation

   Rotation in CW direction is performed until the Cuv wash nozzle upper position sensor (S61) becomes ON, and then stop is made after rotation for another 213 P in CW direction.

Detailed operation of the nozzle section

1. First nozzle section

   Aspiration of the mixture in the cuvette and dispensing of detergent A into the cuvette

2. Second nozzle section

   Aspiration of the detergent A dispensed by the first nozzle section and dispensing of detergent B into the cuvette

3. Third nozzle section

   Aspiration of the detergent B dispensed by the second nozzle section and dispensing of cooled deionized water into the cuvette

4. Fourth nozzle section

   Aspiration of the deionized water dispensed by the third nozzle section and dispensing of cooled deionized water into the cuvette

5. Fifth nozzle section

   Aspiration of the deionized water dispensed by the fourth nozzle section and dispensing of cooled deionized water into the cuvette

6. Sixth nozzle section

   Aspiration of the deionized water dispensed by the fifth nozzle section and dispensing of cooled deionized water into the cuvette

7. Seventh nozzle section

   Aspiration of the deionized water dispensed by the sixth nozzle section

8. Eighth nozzle section

   Aspiration of the deionized water which could not be aspirated by the seventh nozzle section and drying of the inside of the cuvette

Washing sequence operation outline

There are two types of vertical operation of the FB unit.

1. Sequence with high-speed vertical movement during analysis operation etc.
2. Sequence with operation with slow descent because there is liquid in the cuvette at the descent position for the drying tip (eighth nozzle) before the start of analysis and high-speed rise in the same way as for normal operation.

Washing sequence

1. Analysis operation

When the rotation of the cuvette wheel stops (2.7 sec), the FB unit descends, and the nozzles 1 to 8 are inserted into the cuvette.

Each aspiration nozzle starts aspiration at the time of descent and aspirates the liquid in the cuvette. The seventh nozzle is only for aspiration, and the remaining liquid is aspirated by the eighth nozzle.

Aspiration stops directly before the descent stops, and the first nozzle dispenses detergent A into the cuvette, the second nozzle dispenses detergent B, and the third to sixth nozzle dispense deionized water.

At this time, any liquid in excess of the specified amount (800 µl) is aspirated by the overflow nozzle. At the time of rise, the liquid in each dispensing nozzle is aspirated for 0.4 sec to prevent liquid dripping from the nozzle. Directly after the rise, the cuvette wheel rotates and shifts to the next cycle, and then the above work is repeated.

2. Cuvette washing (low-speed descent operation)

The cuvette washing nozzle descends at high speed to the upper part of the cuvette, and then it descends at low speed into the cuvette while aspiration of the liquid in the cuvette also is done by the eighth nozzle (drying tip).

Nozzle rise is performed at high speed in the same way as for analysis operation.

After rise completion, the cuvette wheel rotation stops, the FB unit descends again, and the shifting to the next cycle is done.

3. Detergent A dispensing stop operation (W1 completion operation)

The cuvette washing nozzles operate with the same timing as for analysis operation.

However, at the time of detergent dispensing, the detergent A dispense valve (V17) does not operate, and only detergent B and deionized water are dispensed into the cuvette. This operation is repeated for four cycles.

4. Detergent A, detergent B dispensing stop operation (W1 completion operation)

The cuvette washing nozzles operate with the same timing as for analysis operation.

However, the detergent A dispense valve (V17) and the detergent B dispense valve (V18) do not operate at the time of detergent dispensing, and only deionized water is dispensed into the cuvette. This operation is repeated for 16 cycles.

5. Detergent dispensing stop operation (W1 completion operation)

The cuvette washing nozzles operate with the same timing as for analysis operation.

However, the detergent A dispense valve (V17), the detergent B dispense valve (V18), and the wash water disp. valve (V16) do not operate, and only aspiration operation is performed. This operation is repeated for 16 cycles.

■ Explanation of the FB Unit Mechanisms

Operation of the FB unit

Vertical movement of the nozzle (01) is performed by forward/reverse rotation of the pulse motor (02) with gear head.

The disk (05) is installed on the output shaft, and the disk (05) has the bearing (06) and a notch in the outer circumference.

When the output shaft rotates in CW direction, the nozzle rises, and when the FB upper position sensor (03) detects the notch, stop is performed after the specified number of pulses. Nozzle descent is performed by the output shaft rotating in CCW direction for the specified number of pulses and then stopping.

The slider (07) moves up and down along the LM guide rail (09) fixed to the LM guide (08). The slider (07) has an L-shaped bend. At this part, the dead weight of the slider, the dead weight of the nozzle mounting plate (10), the mounting screw (11), etc., and the tensile force of the spring (12) are applied to the bearing (06). Accordingly, when the output shaft rotates in CW direction, the nozzle rises because the rotation of the output shaft in CW direction causes the slider (07), the nozzle mounting plate (10), and the nozzle holder (14) via the bearing (06) to rise, and the nozzle descends with rotation in CCW direction.

The nozzle is fixed to the nozzle guide (13), and the nozzle guide (13) is mounted on the nozzle holder (14). The spring (15) is installed between the nozzle holder (14) and the nozzle guide (13). When the nozzle has reached the bottom of the cuvette, stop is performed at the position where the nozzle holder has descended another 2 mm. At this time, the spring (15) contracts, and all eight nozzles are pressed against the bottom of the cuvette.

At this time, the slider (07) comes into contact with the stopper (17) and the descent operation stops. The slider (07) has a notch, and when the descent operation is performed smoothly, the FB descent confirmation sensor (15) detects the notch, and detergent is dispensed into the cuvette from each nozzle. When the nozzles get entangled in the cuvette wheel etc., the slider (07) can not descend and the FB descent confirmation sensor (15) can not detect the notch, so that detergent is not dispensed.

■ Schematic Drawing of the FB Unit

Nozzle section

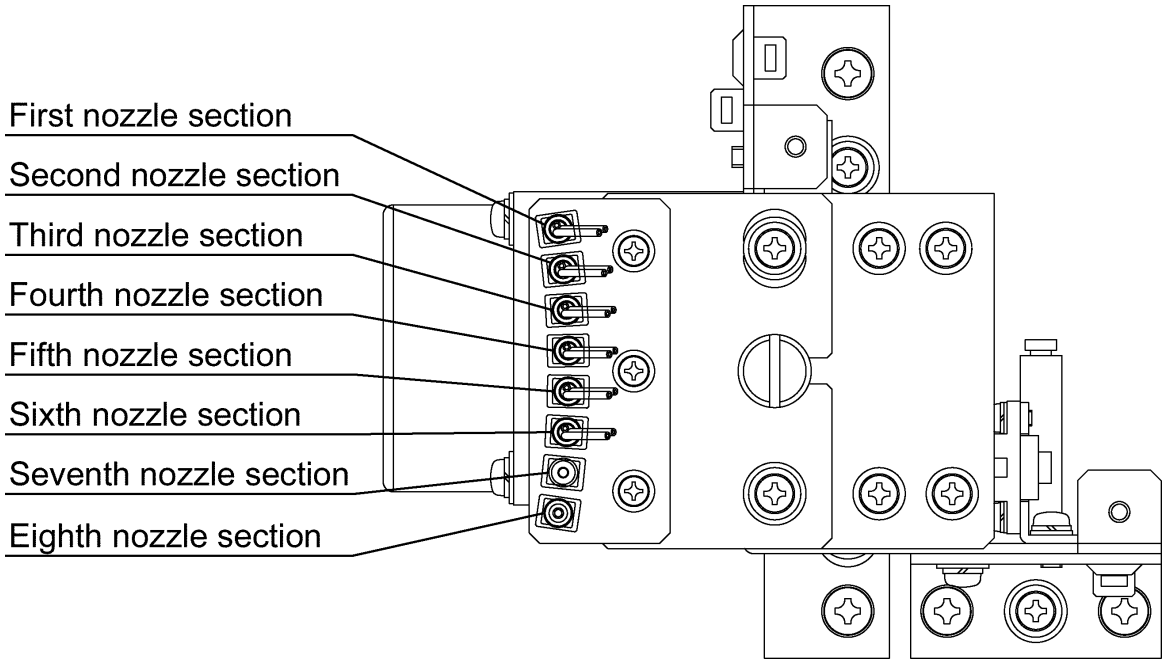


Fig. 1

Rear view of the FB unit

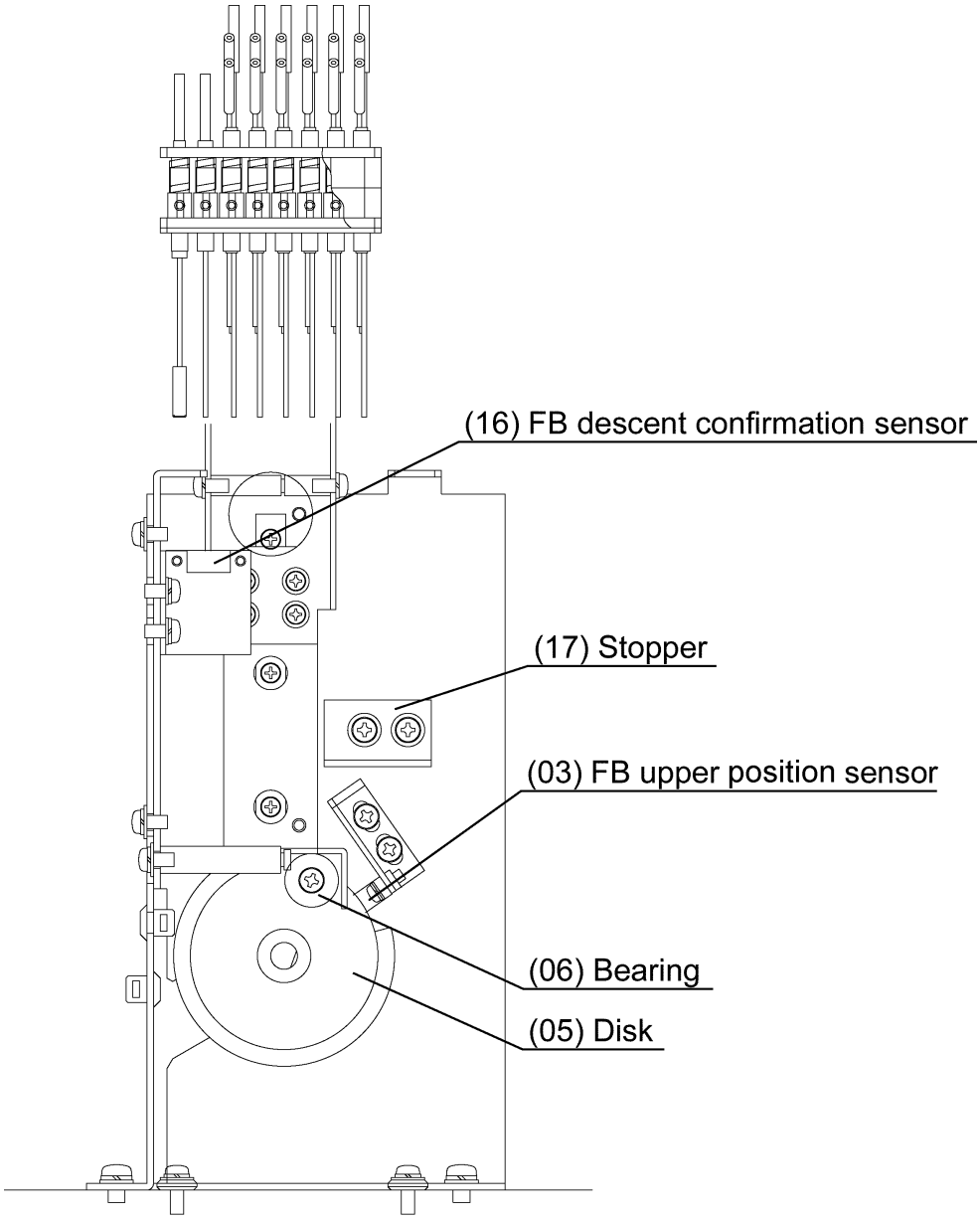


Fig. 2

Side view of the FB unit

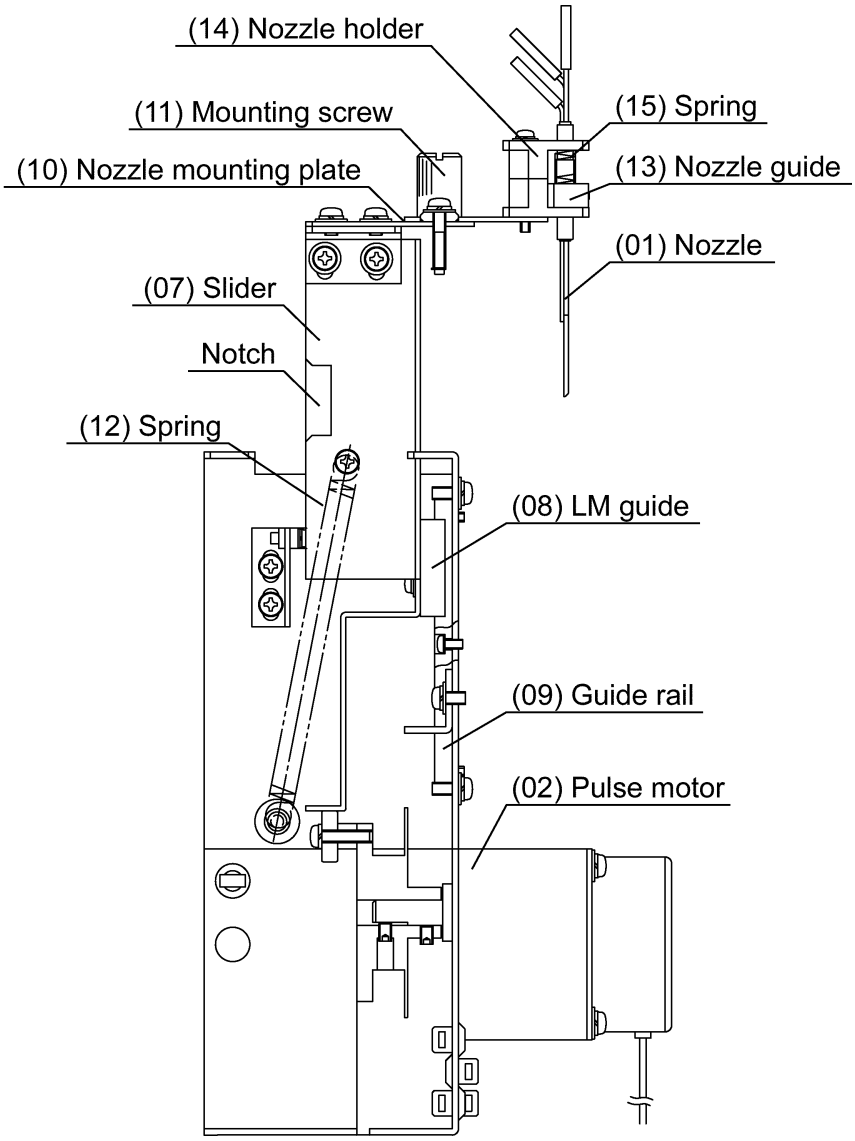


Fig. 3

■ Operation Explanations for the FC Unit

Initialization operation

1. Movement away from the upper position

   When the MIX1 upper position sensor (S60) (MIX2 upper position sensor (S132)) is ON at the start of initialization operation, descent is performed for 80 P. When the MIX1 upper position sensor (S60) (MIX2 upper position sensor (S132)) is ON after the descent, an error is generated.

2. Upper position origin operation

   Rise is performed until the MIX1 upper position sensor (S60) (MIX2 upper position sensor (S132)) becomes ON, and then stop is performed after rise for 8 P.

3. Movement away from the rotation origin

   When the MIX1 rotation origin sensor (S58) (MIX2 rotation origin sensor (S130)) is ON at the start of initialization operation, rotation in CCW direction is performed for 80 P.

4. Rotation origin operation

   Rotation in CW direction is performed until the MIX1 rotation origin sensor (S58) (MIX2 rotation origin sensor (S130)) becomes ON, and then stop is performed after rotation for 8 P in CW direction.

Mixing sequence operation

- In the first sequence, after rotation to the cuvette position, descent is performed (42 mm) and the mixture is mixed (1.7 sec, 5000 rpm).
- In the second sequence, rise is performed to the upper position, and after rotation for 120° in CW direction, descent is performed and washing is performed with the detergent B.
- In the third sequence, rise is performed to the upper position, and after rotation for 120° in CW direction, descent is performed and washing is performed with the deionized water.

■ Explanation of the FC Unit Mechanisms

Mixing mechanism

The mixture is mixed by inserting the mixing bar into the mixture and rotating it. The mixing motor (50) is installed on the M-motor plate (26) at the lower part of the spline (33), and its drive force is transmitted via the motor gear (08) to the intermediate gear 30 (07) and the shaft (13). The intermediate gear 80 (06) is installed at the upper part of the shaft (13), and the shaft rotation is transmitted to the intermediate gear 70 (05) and the mixing gear (04). The mixing bar is set on the mixing gear (04), and the mixing bar is rotated to mix the mixture.

The M-motor plate (26), on which the mixing motor (50) is installed, is fixed to the drive plate (22). The drive plate (22) is fixed to the lower part of the spline (33) via the bearing (42). The rotation prevention bearing (47) is installed on the drive plate (22), so that it will not rotate even when the spline (33) rotates.

Rotation mechanism

The rotation force of the rotation motor (49) is transmitted to the housing (17) via the rotation pulley (drive) (35), the rotation belt (38), and the rotation pulley (driven) (34). It is further transmitted to the spline (33) fixed inside the housing (17), the mixing section at the upper part of the spline (33) is moved horizontally, and each mixing bar is rotated to the cuvette position, the detergent wash tank position, and the water wash position.

For positioning, the notch in the disk (14) installed on the housing is watched by the origin sensor (54), origin positioning is performed, and the transfer to each stop position is performed by fixed pulse transfer. At each stop position, the rotation stop position is confirmed by the stop position sensor (55).

Vertical movement mechanism

The rotation force of the up/down motor (48) is transmitted to the drive plate (22) via the up/down pulley (drive) (37) and the up/down belt (39) and converted to vertical movement. The vertical movement drive force is transmitted to the spline (33) via the bearing (42), the mixing section at the upper part of the spline (33) is moved vertically, and the vertical transfer of the mixing bar is made to the upper position and the lower position.

For the positioning, the sensor flag (27) installed on the drive plate (22) is checked by the upper position sensor (53), origin positioning is performed, and the transfer to the lower position is done by fixed pulse transfer.

In order to suppress mixture carry-over and carrying in of wash water at the time of rise, rise initially starts slowly with constant speed, and then accelerated and decelerated rise is performed.

■ Schematic Drawing of the FC Unit

Front view 1 of the FC unit

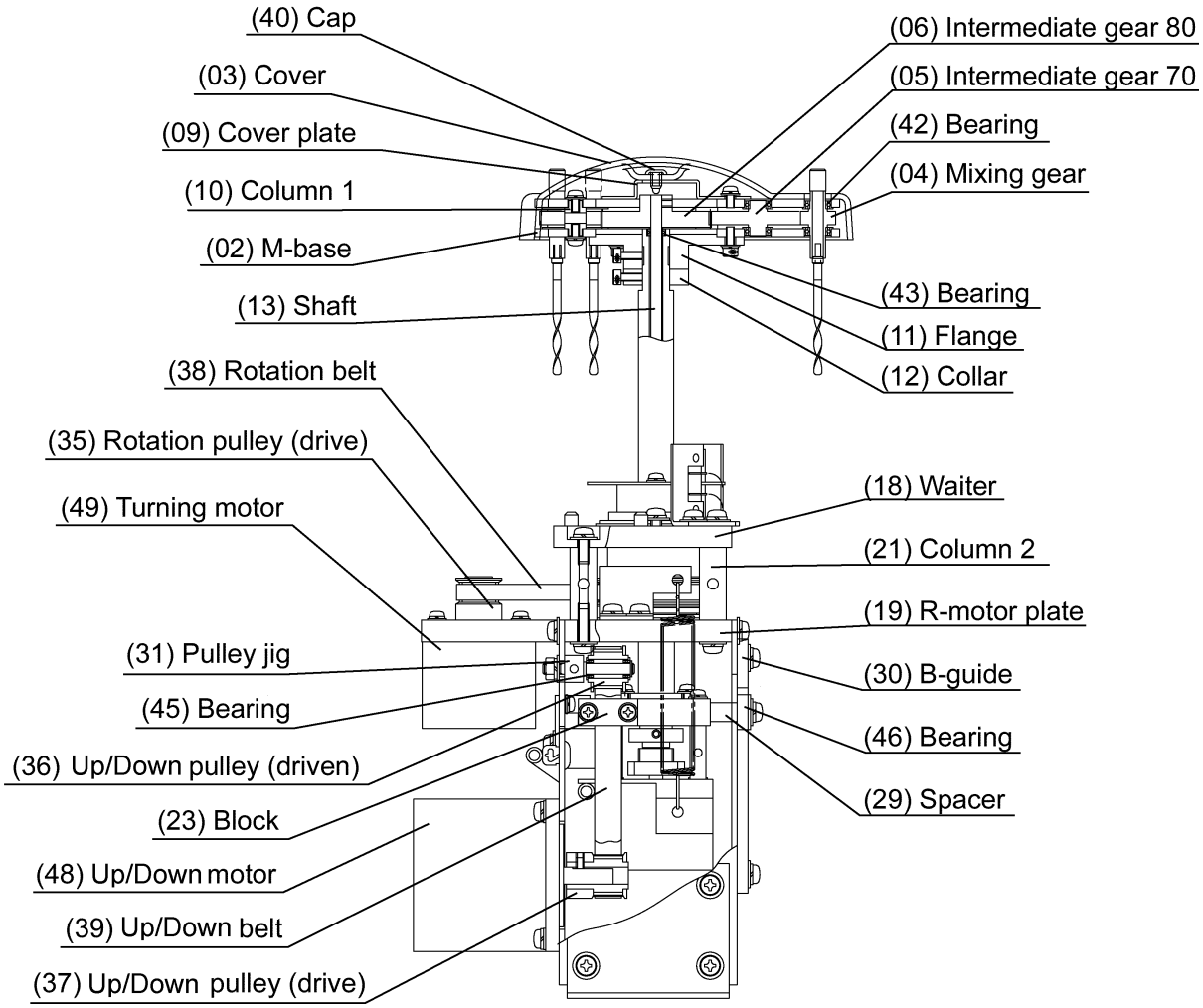


Fig. 1

Front view 2 of the FC unit

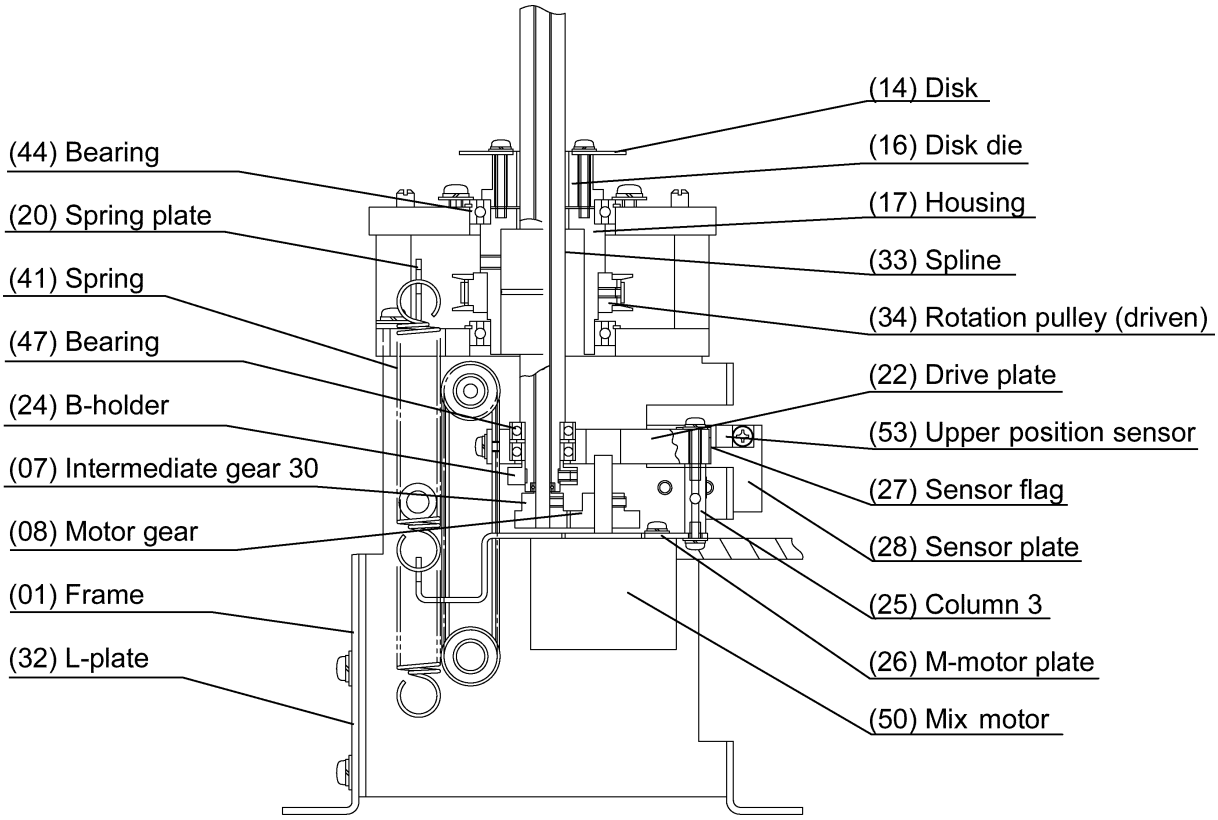


Fig. 2

Top view of the FC unit

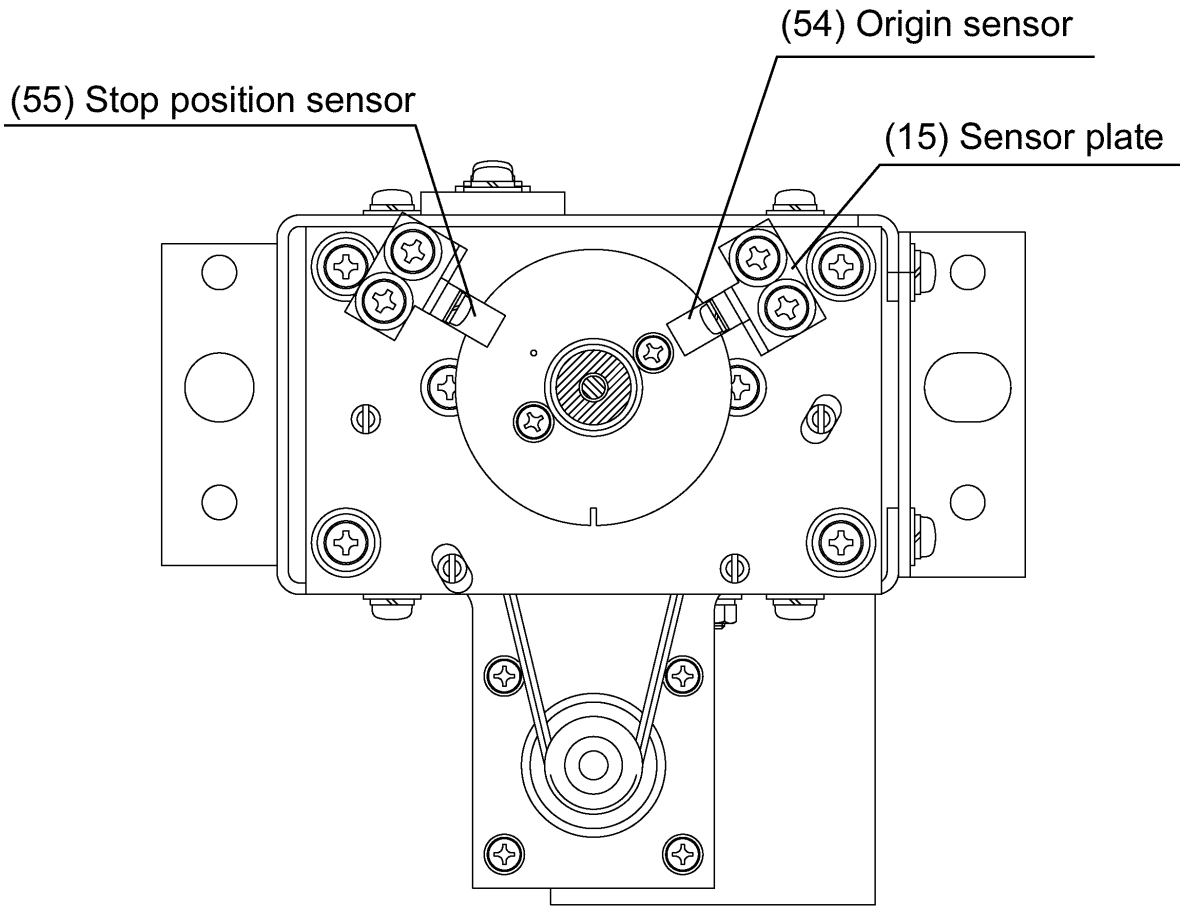


Fig. 3

■ Operation Explanations for the FD Unit

Initialization operation

1. Operation away from the upper position

   When the R1 probe upper position sensor (S46) (R2 probe upper position sensor (S118)) is detected at the start of initialization, descent for 150 P is performed after rotation initialization. (1000 pps)

2. Upper position origin operation

   Rise is performed at 1000 pps, and after the R1 probe upper position sensor (S46) (R2 probe upper position sensor (S118)) has become ON, stop is performed after rise for another 20 P.

3. Operation away from the rotation origin

   When the R1 probe rotation origin sensor (S43) (R2 probe rotation origin sensor (S115)) is detected at the start of initialization, rotation is performed for 200 P in CW direction (FD01) (CCW direction (FD11)). (1000 pps)

4. Rotation origin operation

   Rotation in CCW direction (FD01) (CW direction (FD11)) is performed at 1000 pps, and after the R1 probe rotation origin sensor (S43) (R2 probe rotation origin sensor (S115)) has become ON, stop is performed at the first phase origin.

5. Wash position rotation operation

   Acceleration/deceleration operation in CCW direction (FD01) (CW direction (FD11)) to the wash position

6. Wash position vertical movement

   After descent for 432 P at the wash position, rise is performed at 1000 pps, and after the R1 probe upper position sensor (S46) (R2 probe upper position sensor (S118)) has become ON, stop is performed after rise for another 20 P.

7. Liquid level detection check operation (only at the start of measuring operation)

   Probe washing water (inside, outside) is discharged, the probe is lowered for 24 mm, and the operation of the R1 liquid level detection sensor (S55) (R2 liquid level detection sensor (S127)) is confirmed. Afterwards, the probe rises to the upper position.

Dispensing sequence operation

- Descent from the wash position upper position to the wash position lower position
- Washing operation
- After rise for 2 mm during washing operation, rise to the wash position upper position is performed after a fixed time.
- When the R1 probe upper position sensor (S46) (R1 probe upper position sensor (S118)) is ON, rotation is performed to the reagent aspiration position. (Acceleration/deceleration operation)
- When the R1 tray stop position (48) sensor (S50) tray stop position(48) sensor (S122)) is ON and the reagent table access prohibition signal is OFF, descent is performed, and deceleration stop is performed after liquid level detection.
- Reagent aspiration operation
- 5.6 mm (100 P) fixed speed rise
- Rise to the upper position (acceleration/deceleration operation)
- When the R1 probe upper position sensor (S46) (R1 probe upper position sensor (S118)) is ON, rotation is performed to the reagent discharge position (cuvette). (Acceleration/deceleration operation)
- When the Cuv wheel stop position sensor (S57) is ON and the Cuv wheel access prohibition signal is OFF, descent is performed to the specified height.
- Reagent discharge operation
- Rise to the upper position (acceleration/deceleration operation)
- When the R1 probe upper position sensor (S46) (R1 probe upper position sensor (S118)) is ON, rotation is performed to the wash position. (Acceleration/deceleration operation)

Probe descent operation (reagent discharge position)

- The amount of probe descent into the cuvette at the time of reagent discharge varies in the range from 22 to 35 mm depending on the total dispensing quantity (R1 + R2 + sample).

■ Explanation of the FD Unit Mechanisms

Rotation mechanism

The arm (3) is installed on the ball spline shaft (8). The ball spline shaft (8) is held by the spline bush (9), and it can move freely in vertical direction, but rotation is restrained by the pulley (5). The pulley (5) is supported vertically by the bearing, and even when belt tension is applied, the movement of the ball spline shaft (8) is not influenced.

The ball spline shaft (8) is rotated by the rotation motor (4) via the timing belt pulley. A five-phase pulse motor is used for the rotation motor (4), so that it can withstand high-speed rotation. The rotation stop position is decided by the number of pulses from the origin sensor. The stop position is confirmed by the rotation position sensor (1) and the sensor plate (2) with a notch in it.

There are two sensors for the rotation position, one for the reagent aspiration position and one for other stop positions.

Vertical movement mechanism

The change nut (10) is installed on the vertical movement base (11), and the vertical movement base (11) moves up and down when the change screw (10) turns. The change screw (10) is connected to the up/down motor (14) via the coupling (13), and it is driven by the up/down motor (14). The up/down motor (14) is a two-phase pulse motor.

The ball spline shaft (8) is installed with a thrust bearing on the vertical movement base (11) so that it can rotate freely, and it moves up and down together with the vertical movement of the vertical movement base (11). In addition, the linear bush (9) is installed on the vertical movement base (11), and as it is guided by the linear shaft (12), the vertical movement base (11) can not become inclined during vertical movement because of play of the change nut (10).

The upper position of the probe is where the sensor plate (7) intersects the origin sensor (6).

Arm section

The arm (b) is made of aluminum, and the liquid level detection plate (e) is installed on the arm inside. The holder (l) made of stainless steel is installed on the arm via the insulator.

The crash detection sensor flag (g) is installed on the holder (l), and in case of crash of the S-probe (m), the crash detection sensor flag (g) is separated from the crash detection sensor.

The S-probe (m) is installed by inserting it into the holder (l) and using the rubber tube (d) with the T-holder (h) and the setscrew (i) to connect the piping and to fix the S-probe. At this time, the S-probe (m) and the holder (l) are connected electrically.

■ Schematic Diagram of the FD Unit

Front view of the FD unit

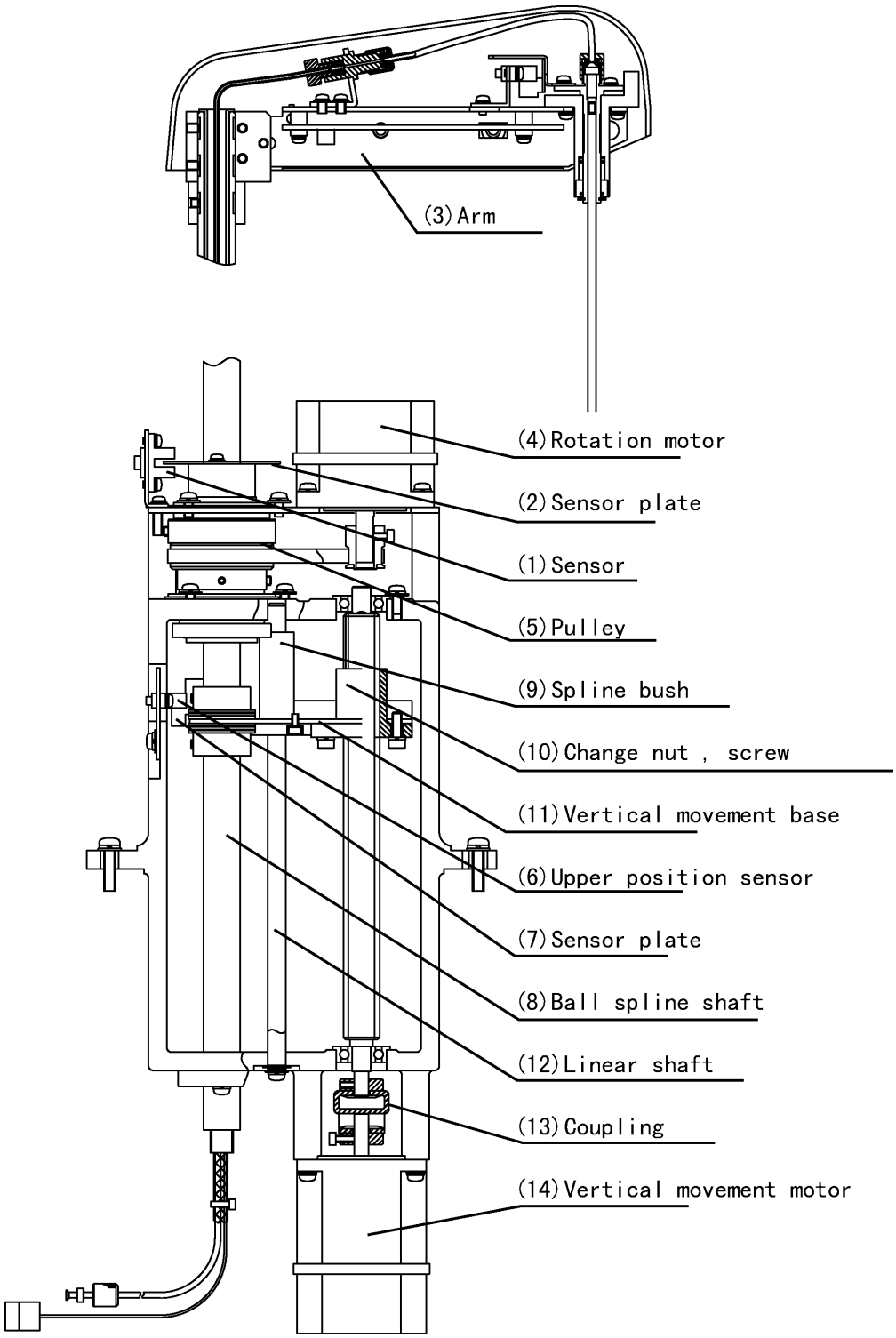
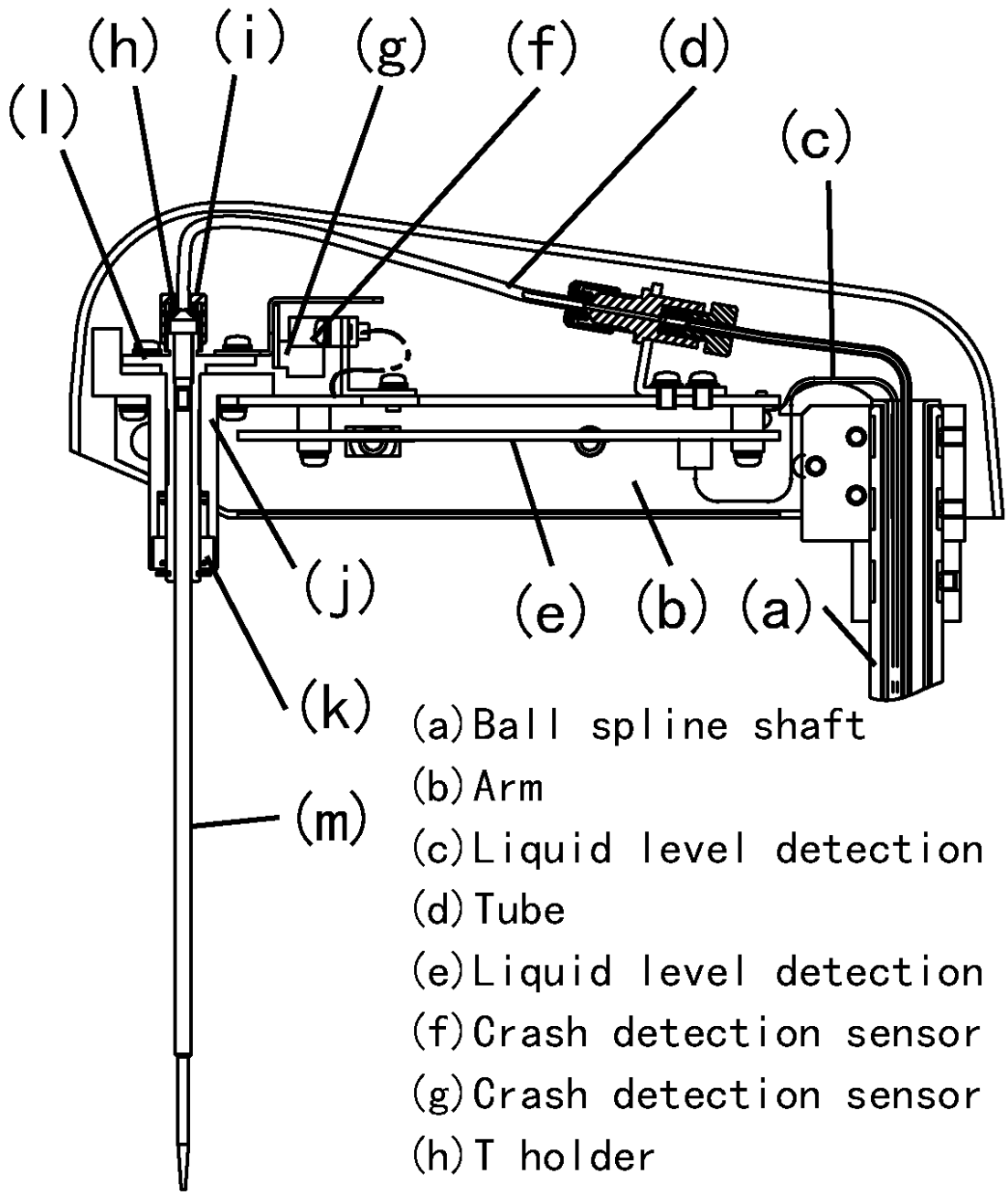


Fig 1

Side view of the Arm



(a)Ball spline shaft
(b)Arm
(c)Liquid level detection cable
(d)Tube
(e)Liquid level detection board
(f)Crash detection sensor
(g)Crash detection sensor plate
(h)T holder
(i)set screw
(j)Insulator
(k)Spring
(l)Holde
(m)R probe

Fig 2

Top view of the Rotation mechanism

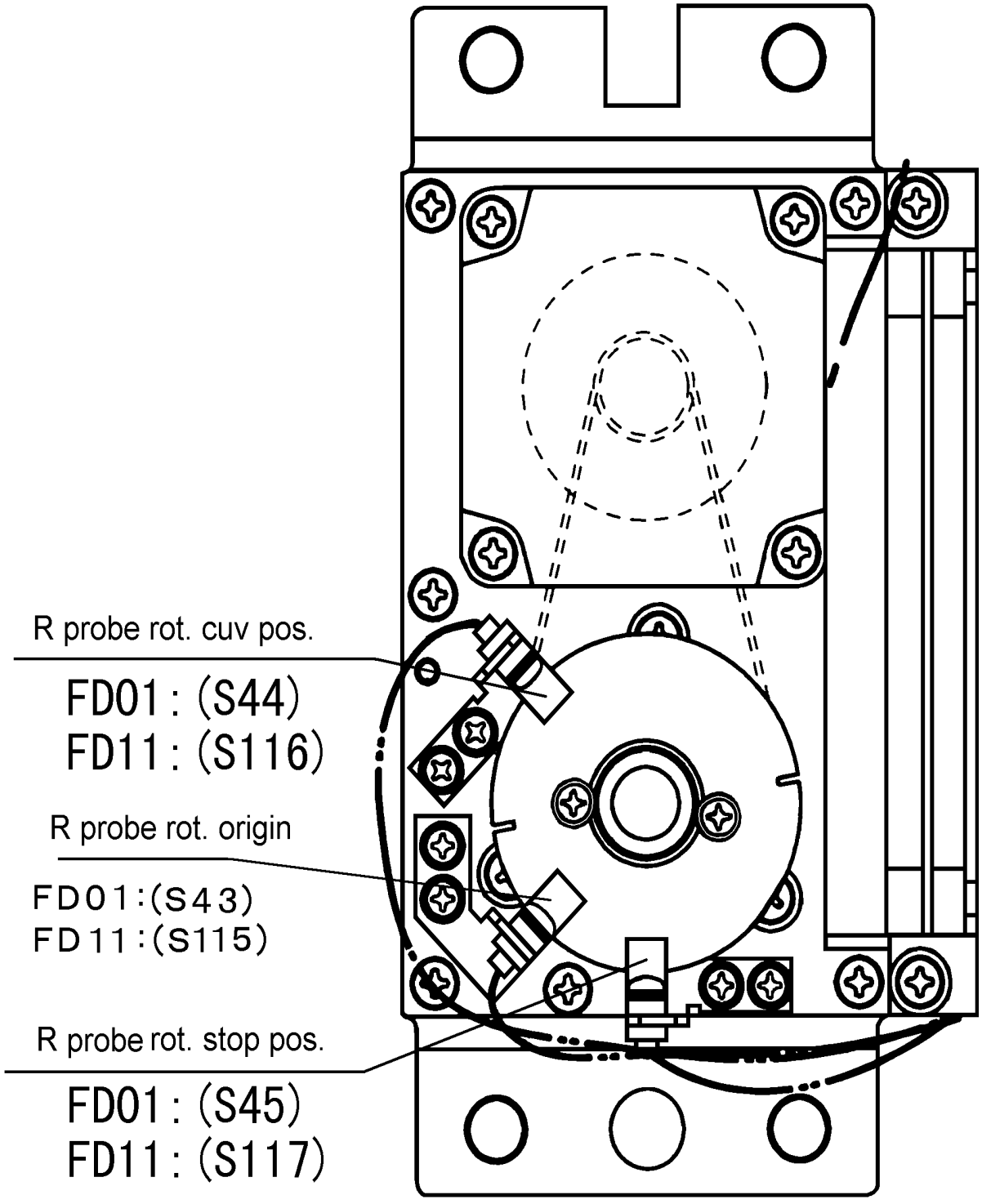


Fig 3

■ Operation Explanations for the GA Unit

● Initialization operation

1. Movement away from the rotation origin

   When the Cuv wheel origin sensor (S56) is ON at the start of initialization, rotation is performed for 800 P in CW direction. When the Cuv wheel origin sensor (S56) is ON after the rotation, an error is generated.

2. Rotation origin operation

   Rotation in CCW direction is performed until the Cuv wheel origin sensor (S56) becomes ON, and then stop is performed after further rotation in CCW direction for 10 P.

● Sequence operation

During one cycle (4.5 sec), the cuvette wheel rotates for 38 cuvettes in CCW direction (rotation time: 1.8 sec). In four cycles (18 sec), "1 rotation - 1 cuvette" is performed.

● Photometry operation

Photometry is performed dynamically during rotation, while the respective cuvette passes through the light bundle.
Photometry is performed for a total of 28 times in intervals of 18 sec (the time for one photometry is 8 msec).

After dispensing of the first reagent:	28 times
After sample dispensing:	27 times
After dispensing of the second reagent:	17 times

■ Explanation of the GA Unit Mechanisms

● Cuvette transfer

1. Integrated type

The cuvette wheel (2) supporting the cuvette (1) is held by the bearing (3) and it is installed so on the internal gear (04) that removal is possible.

The internal gear (4) is engaged with the intermediate gear (5) and the small gear (6), and the small gear (6) is installed on the rotation motor.

The cuvette wheel origin position and the stop positions (153 positions) are detected by the sensors (8) and (9) and the detection plate (10) fixed to the internal gear (4). The rotation motor (7) is a pulse motor, and the stop positions are controlled by the number of pulses from the origin position.

2. Divided cuvette

The cuvette holder (2-1) for holding of 153 cuvettes (1) is composed of 17 parts, and these parts are installed removably on the cuvette wheel (2-2) and the internal gear (4). The internal gear (4) is engaged with the intermediate gear (5) and the small gear (6), and the small gear (6) is installed on the rotation motor (7).

The cuvette wheel origin position and the stop positions (153 positions) are detected by the sensors (8) and (9) and the detection plate (10) fixed to the internal gear (4). The rotation motor (7) is a pulse motor, and the stop positions are controlled by the number of pulses from the origin position.

● Cooling

The cuvette cooling method is an air bath method. The coolant (12) in the incubation bath (11) is circulated by the circulation pump (13) in arrow direction in the incubation bath. The lamp housing (14) is included in the circulation path for lamp cooling by the coolant. The circulation also passes through the condenser (15), where the coolant is cooled by blowing of external air.

The heater (18) is connected to the heating pipe (17), which is connected to the incubation bath, and the coolant is controlled to a constant temperature by the coolant temperature sensor (19). The temperature sensor (16) monitors the temperature in the equipment, and when the temperature in the equipment exceeds the specified value, external air is blown to the condenser (15) to cool the coolant.

● Photometry

The light from the lamps passes through the lighting lens, where it is focussed, it enters the cuvette as spotlight, and the light coming from the cuvette passes through a relay lens and a slit and enters the grating.

The light bundle which has passed through the cuvette is dispersed by the grating. The continuous spectrum becomes a nearly linear image. Each wavelength is led to the photometry section by arranging photo sensors at the positions corresponding to the required wavelengths.

■ Schematic Drawing of the GA Unit

- Cross section drawing

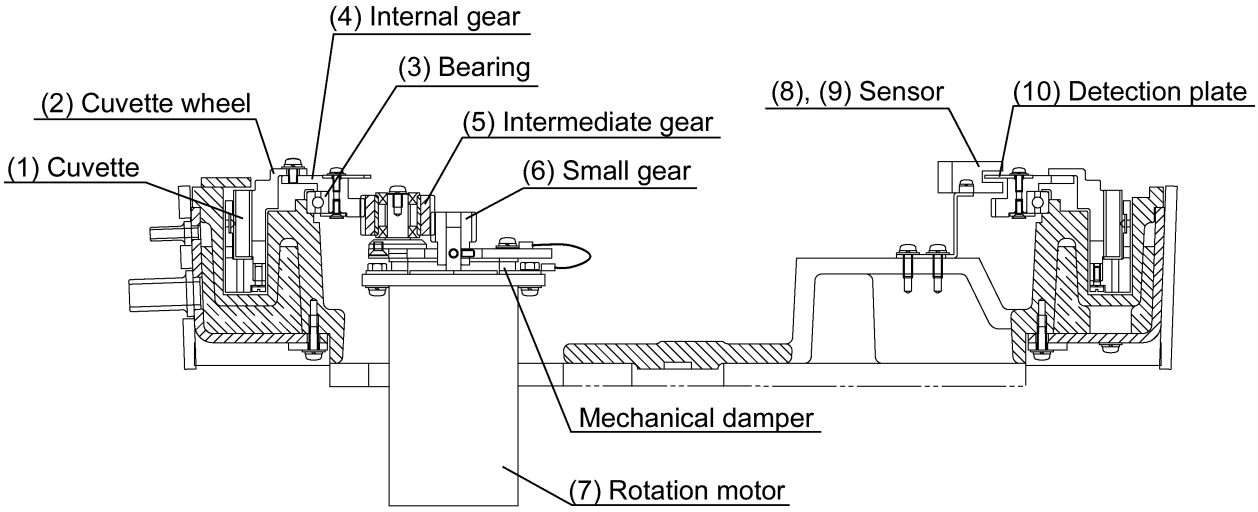


Fig. 1 Integrated type

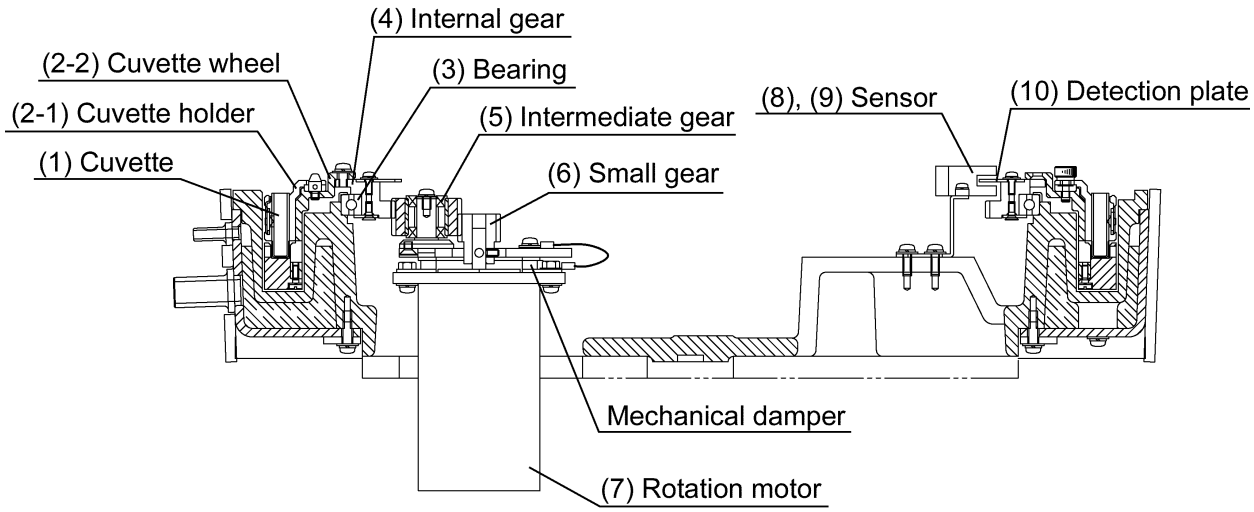


Fig. 2 Divided cuvette

- Top view

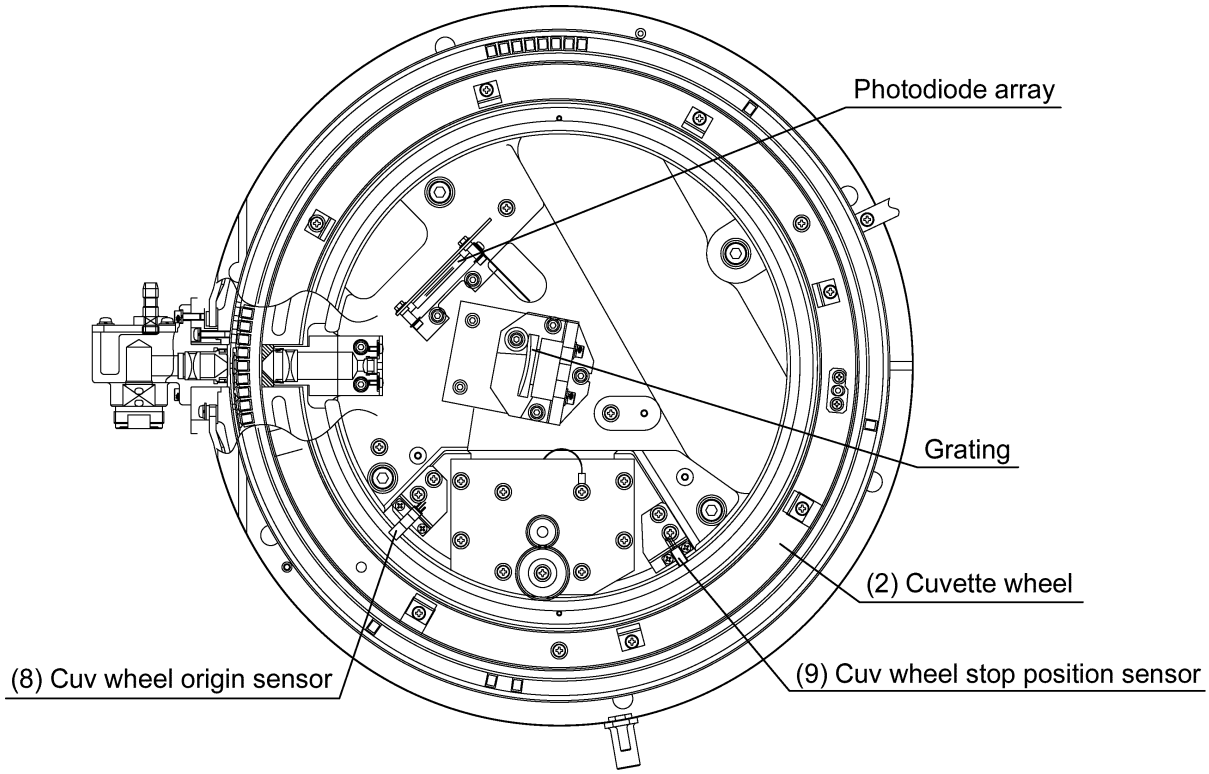


Fig. 3 Integrated type

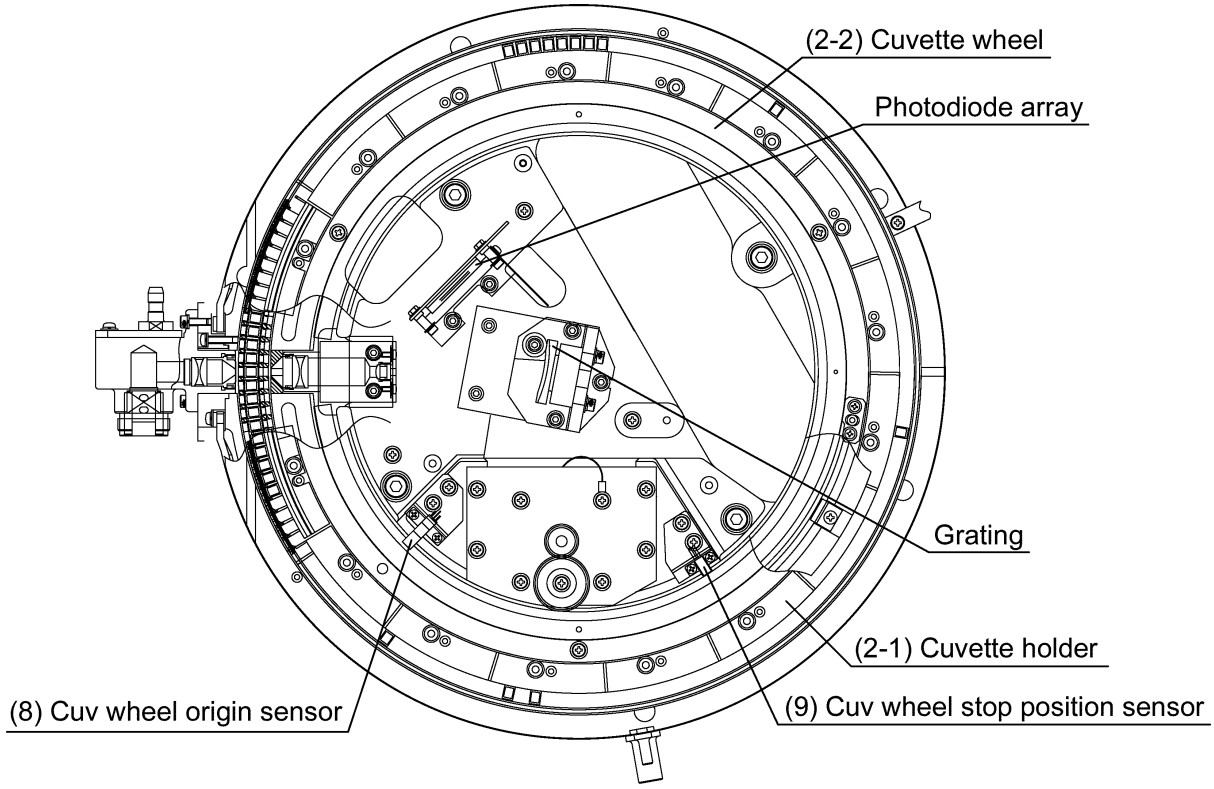


Fig. 4 Divided cuvette

- Incubation bath piping

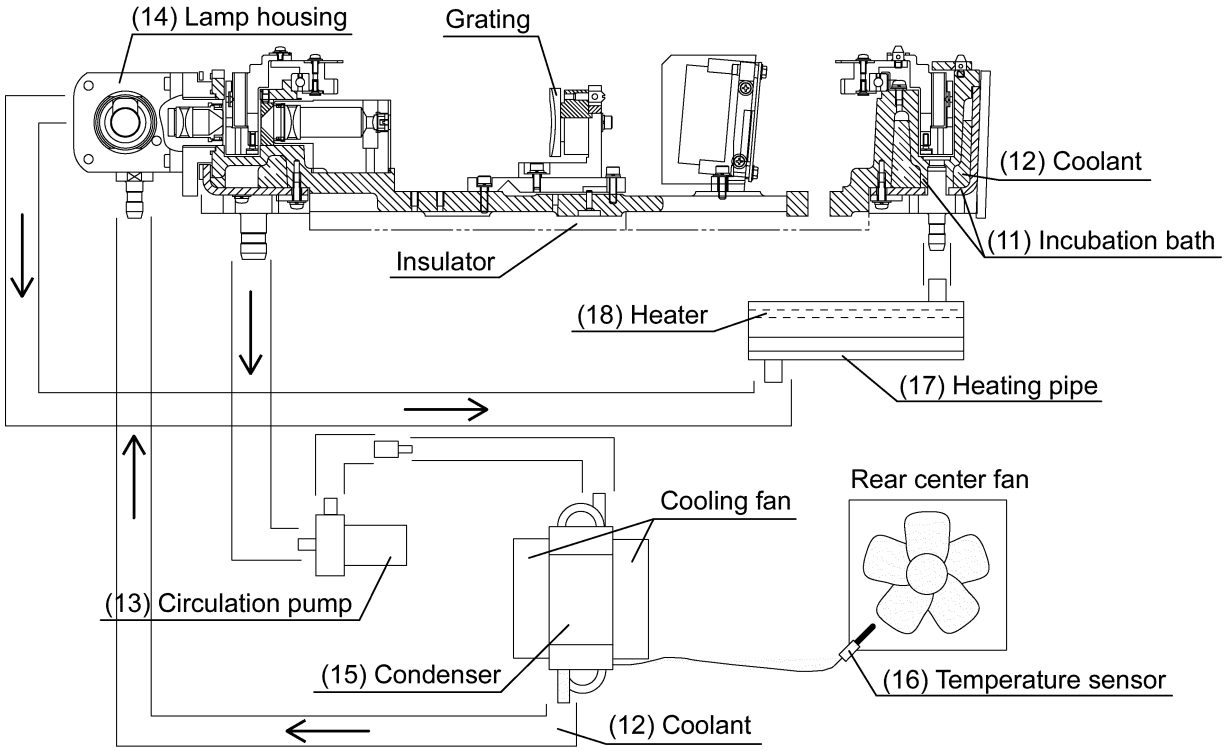


Fig. 5

■ Operation Explanations for the Piping of the Dispensing System

Reset operation (SA unit)

- Upper position trip operation (at the time of upper position detection descent 100 p each in CCW direction at 1000 pps until the upper position sensor becomes OFF)
- Upper position operation (rise at 1000 pps in CW direction and stop at the first phase origin after upper position sensor detection)
- Origin operation (38 p descent in CCW direction)

Dispensing sequence operation

1. Sample fixed quantity dispensing sequence

- Descent from the wash position (upper position) to the wash position (lower position)
- ***Air + excess discharge***
- ***Spare aspiration during wash operation***
- Rise to the wash position (upper position)
- ***Spare discharge***
- Rotation to the sample aspiration position (rack, STAT, ISE STD)
- ***Air suction***
- Descent to sample liquid level detection
- ***Sample + dummy + excess aspiration (the aspiration timing is delayed depending on the sample dispensing quantity (probe vibration countermeasure))***
- Probe 90 p rise
- ***Dummy discharge***
- Rise to the upper position
- Movement to the sample discharge position (cuvette, ISE)
- ***Sample discharge (the discharge timing is delayed depending on the sample dispensing quantity (probe vibration countermeasure))***
- Movement to the wash position

2. Sample dilution dispensing sequence, ISE dispensing sequence

- Descent from the wash position (upper position) to the wash position (lower position)
- ***Air + excess discharge***
- ***Spare aspiration during wash operation***
- Rise to the wash position (upper position)
- ***Spare discharge***
- Rotation to the sample aspiration position (rack, STAT, ISE STD)
- ***Air suction***
- Descent to sample liquid level detection
- ***Sample aspiration***
- Probe 90 p rise
- ***Dummy discharge***
- Rise to the upper position
- Movement to the sample discharge position (cuvette, ISE)
- ***Sample + dilution water discharge***
- Movement to the wash position

3. Reagent fixed quantity dispensing sequence
   - Descent from the wash position (upper position) to the wash position (lower position)
   - ***Air + excess discharge***
   - ***Spare aspiration during wash operation***
   - Rise to the wash position (upper position)
   - ***Spare discharge***
   - Rotation to the reagent aspiration position (DA unit)
   - ***Air aspiration***
   - Descent to reagent liquid level detection
   - ***Reagent + excess aspiration (the aspiration timing is delayed depending on the reagent dispensing quantity (probe vibration countermeasure))***
   - Probe 100 p rise
   - ***Air aspiration***
   - Rise to the upper position
   - Movement to the reagent discharge position (cuvette)
   - ***Reagent discharge (the discharge timing is delayed depending on the reagent dispensing quantity (probe vibration countermeasure))***
   - Movement to the wash position
4. Reagent dilution dispensing sequence
   - Descent from the wash position (upper position) to the wash position (lower position)
   - ***Air discharge***
   - ***Diluent + spare aspiration during wash operation***
   - Rise to the wash position (upper position)
   - ***Spare discharge***
   - Rotation to the reagent aspiration position (DA unit)
   - ***Air aspiration***
   - Descent to reagent liquid level detection
   - ***Reagent aspiration (the aspiration timing is delayed depending on the reagent dispensing quantity (probe vibration countermeasure))***
   - Probe 100 p rise
   - ***Air aspiration***
   - Rise to the upper position
   - Movement to the reagent discharge position (cuvette)
   - ***Reagent + air + dilution water discharge (the discharge timing is delayed depending on the reagent dispensing quantity (probe vibration countermeasure))***
   - Movement to the wash position

Dispensing quantity

1. Sample fixed quantity dispensing

Dispensing quantity: 2 to 50 µl
Setting possible in units of 0.5 µl
However, setting of 1 µl possible only at the time of rerun.

Spare suction/discharge	: 8 µl
Air layer	: 4 µl (1 to 20 µl)
	: 5 µl (21 to 50 µl)
Dummy quantity	: 5 µl
Excess sample quantity	: 5 µl

2. Sample dilution dispensing

Dispensing quantity: 2 to 50 µl
Setting possible in units of 0.5 µl
However, setting of 1 µl possible only at the time of rerun.

Spare suction/discharge	: 8 µl
Air layer	: 6 µl
Dummy quantity	: 5 µl

3. Sample ISE dispensing

Sample quantity	: 25 µl
Dilution water	: 30 µl

4. Reagent fixed quantity dispensing

Dispensing quantity: 25 to 300 µl
Setting possible in units of 1 µl
However, setting of 1 µl possible only at the time of rerun.

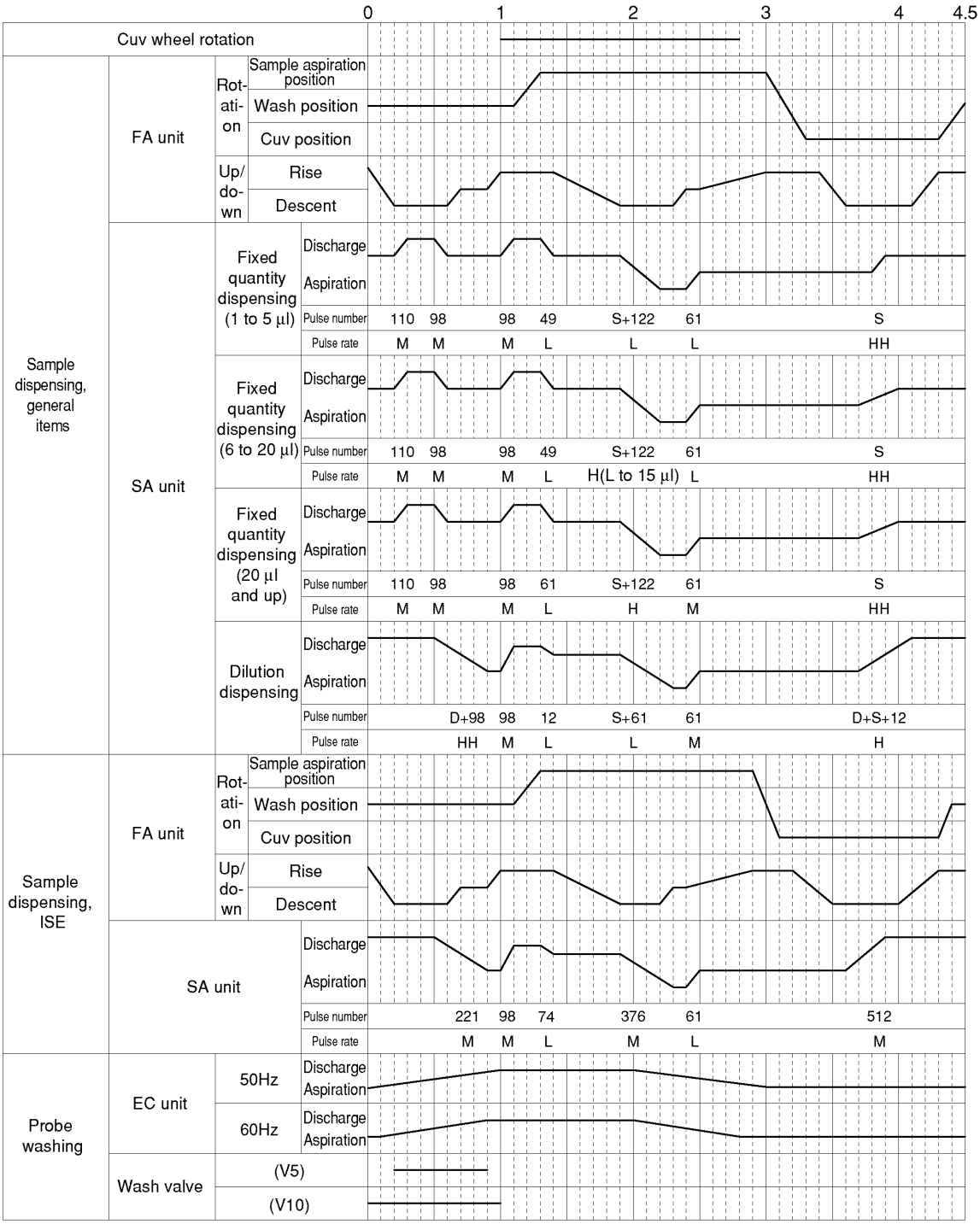
Spare aspiration/discharge	:110 µl
Air layer	:5 µl
Air aspiration	:5 µl x 2
Excess reagent quantity	:5 µl

5. Reagent dilution dispensing

Dispensing quantity: 25 to 300 µl
Setting possible in units of 1 µl
However, 300 µl or less together with the dilution water.
Reagent: 275 µl/water: 25 µl to reagent: 60 µl/water: 240 µl

■ Timing Chart for the Piping of the Dispensing System

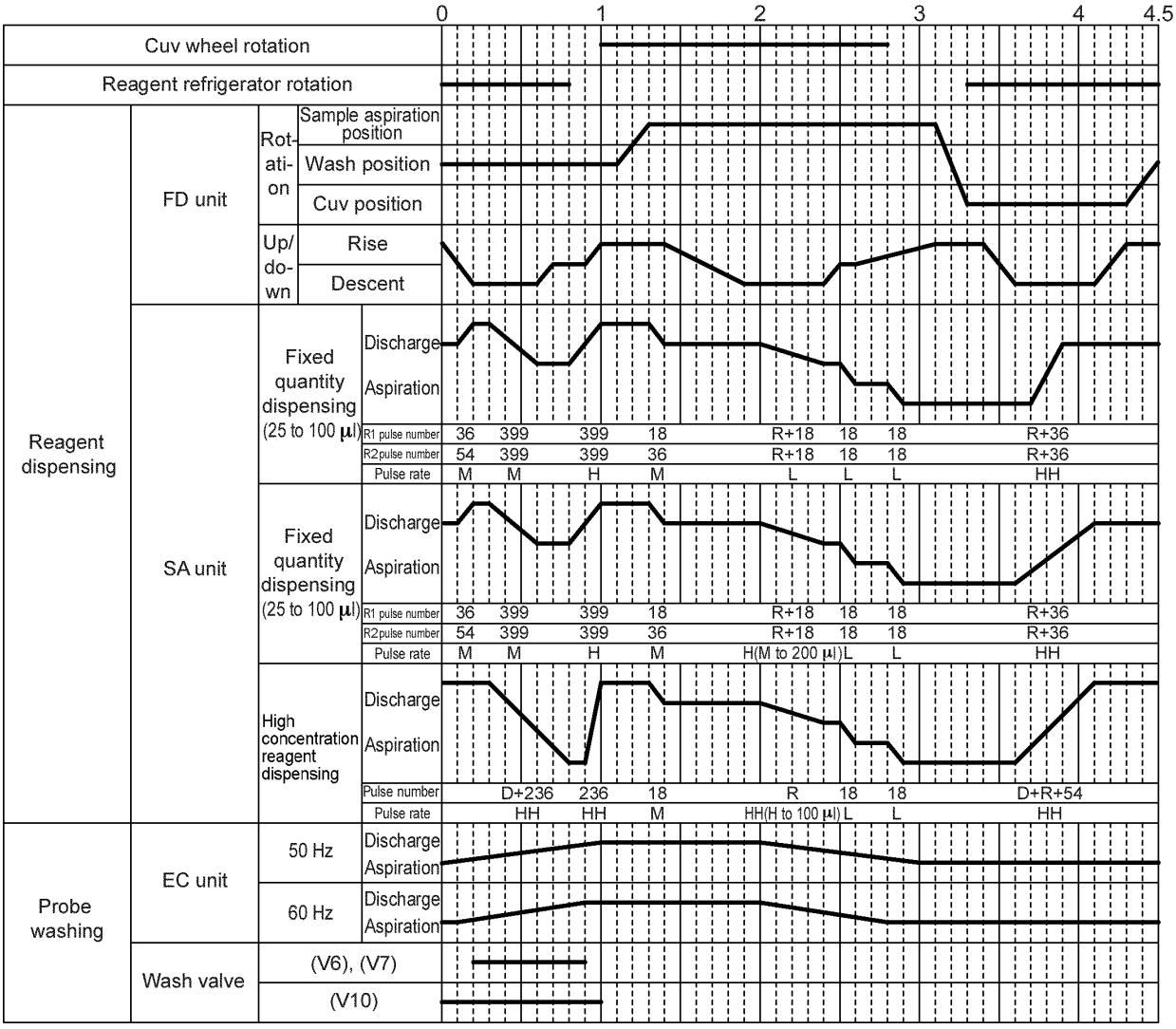
Sample dispensing



Pulse rate

L: 1000 pps, M: 1500 pps, H: 2000 pps, HH: 2500 pps

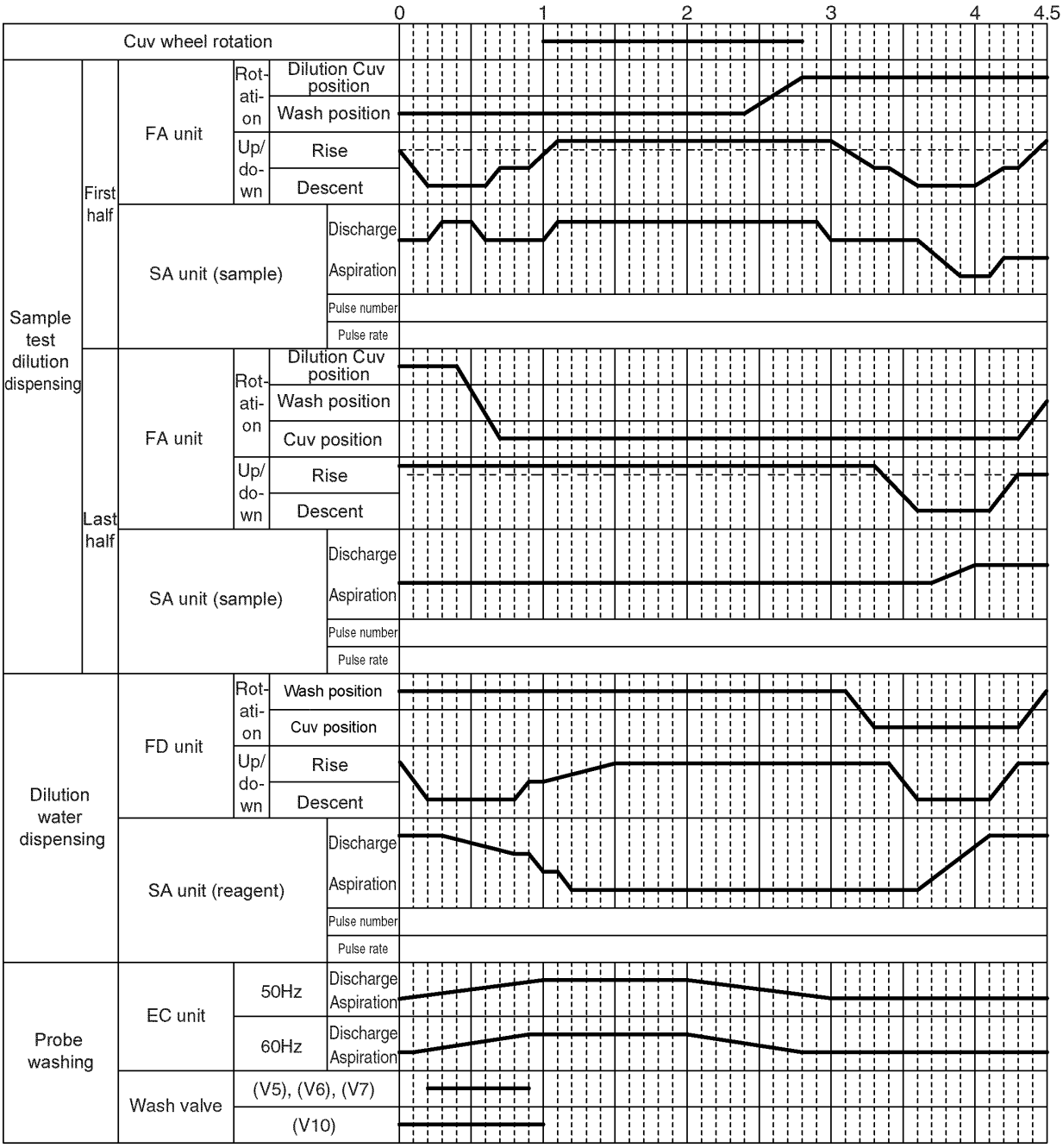
Reagent dispensing



Pulse rate

L: 1000 pps, M: 1500 pps, H: 2000 pps, HH: 2500 pps

Sample test dilution dispensing



Pulse rate

L: 1000 pps, M: 1500 pps, H: 2000 pps, HH: 2500 pps

■ Operation Explanation for the Piping of the Washing System

Supply of detergent

1. Outline

Two types of detergent, type A (acidic) and type B (alkaline), are provided, and the undiluted detergent is aspirated by the pure detergent A supply pump (P12) for undiluted detergent A and the pure detergent B supply pump (P13) for undiluted detergent B and supplied to the detergent A tank and the detergent B tank respectively.

At this time, the detergent solution is created by supplying deionized water from the detergent dilution pump (P2) to the detergent A tank and the detergent B tank respectively.

This detergent solution is aspirated by the detergent A supply pump (P2) and the detergent B supply pump (P3), and by selection of (V17), (V18), (V41), (V43), and (V45), it is supplied to the first and second nozzle of the FB unit and to the wash tank for the mixing bar.

Each undiluted detergent tank is equipped with a float switch for detection of the lower limit of detergent, and when this switch becomes ON, an error message for insufficient undiluted detergent is displayed and an alarm is generated.

The detergent tank is equipped with float switches for upper and lower limit and for upper and lower stored liquid volume between these two limits, and when the lower position is detected, detergent is generated, and the generation stops when the upper position is detected.

When the upper limit or the lower limit is detected, this is displayed as an error on the CRT and an alarm is generated. When the error is not cancelled within the specified time, the equipment is stopped.

2. Detergent generation (dilution of undiluted detergent)

When the float switch at the upper position of the detergent tank becomes OFF during analysis operation of the equipment (4.5 sec cycle), the pump (P12, P13) supplying undiluted detergent performs the specified operation and supplies the specified quantity of undiluted detergent to the detergent tank. Synchronized with this, (V3) (V4) becomes ON (OPEN), and the specified quantity of deionized water is supplied to the detergent tank to dilute the undiluted detergent.

3. Detergent supply

Detergent A and detergent B are generated and stored in the respective detergent tank.

Detergent A is supplied from the detergent A supply pump (P4) to the first nozzle of the FB unit by (V17) ON (OPEN).

Detergent B is supplied from the detergent B supply pump (P5) to the second nozzle of the FB unit by (V18) ON (OPEN) and by (V41), (V43), (V45) ON (OPEN) to the mixing bar wash tank.

4. Wash water (deionized water) supply

The deionized water stored in the deionized water tank is supplied by the deionized water supply pump (P1) to the nozzles of the FB unit, the mixing bar wash tank, and the probe wash tank.

Deionized water is supplied to nozzles 3 to 6 of the FB unit by (V16) ON (OPEN).

Deionized water is supplied to the mixing bar wash tank by (V10), (V12) ON (OPEN).

Deionized water is supplied to the probe wash tank by (V11) ON (OPEN).

Wash water discharge

1. Cuvette washing discharge

Mixture, detergent, etc. in the cuvette is aspirated by inserting the nozzle of the FB unit into the cuvette. Aspiration is done by maintaining a negative pressure in the vacuum tank by means of the vacuum pump (P6), this is connected by piping to the various terminals via (V22), (V26), (V29), and (V32), and when the respective valve becomes ON (OPEN), a negative pressure is generated at the corresponding terminal and the mixture, detergent, etc. is aspirated by the nozzle.

1.1. Mixture aspiration terminal

Nozzle 1 of the FB unit connected to the mixture aspiration terminal performs aspiration of mixture and other concentrated waste to the mixture aspiration terminal, nozzle 2 performs aspiration of detergent A, and nozzle 3 performs aspiration of detergent B from the cuvette to the mixture aspiration terminal.

Aspiration starts with (V29) ON (OPEN) at the time of FB unit nozzle descent, then the mixture aspiration terminal is put under negative pressure, and it ends with (V29) OFF (CLOSE) directly after aspiration during nozzle insertion into the cuvette and descent completion.

This aspiration also is performed directly after nozzle rise to prevent liquid dripping.

When the FB unit nozzle rises, (V28) becomes ON (OPEN), the negative pressure in the mixture aspiration terminal is connected to the atmosphere, then (V30) becomes ON (OPEN), and the aspirated mixture, etc. in the mixture aspiration terminal is discharged as concentrated waste by gravity drop to the outside of the body.

1.2. Wash water aspiration terminal

The nozzles 4 to 7 of the FB unit connected to the wash water aspiration terminal aspirate the wash water in the cuvette to the wash water aspiration terminal.

Aspiration starts with (V32) ON (OPEN) at the time of FB unit nozzle descent, negative pressurization of the wash water aspiration terminal, and ends with (V32) OFF (CLOSE) directly after aspiration during nozzle insertion into the cuvette and descent completion.

This aspiration also is performed directly after nozzle rise to prevent liquid dripping.

When the FB unit nozzle rises, (V31) becomes ON (OPEN), the negative pressure in the wash water aspiration terminal is connected to the atmosphere, then (V33) becomes ON (OPEN), and the aspirated wash water, etc. in the wash water aspiration terminal is discharged as diluted waste by gravity drop to the outside of the body.

1.3. Overflow terminal

The overflow nozzle and the nozzle 8 (drying tip) of the FB unit connected to the overflow terminal aspirate the liquid dispensed into the cuvette in excess of the specified quantity and the liquid remaining in the cuvette respectively.

Aspiration starts with (V22) ON (OPEN) directly after descent of the nozzle of the FB unit, then the overflow terminal is brought to negative pressure, aspiration is performed, and it ends with (V22) OFF (CLOSE) when the nozzle rises.

When the nozzle of the FB unit rises, (V23) becomes ON (OPEN), the negative pressure in the overflow terminal is connected to the atmosphere, then (V24) becomes ON (OPEN), and the aspirated wash water, etc. in the overflow terminal is discharged as diluted waste by gravity drop to the outside of the body.

1.4. Liquid dripping aspiration terminal

The liquid dripping aspiration terminal is connected via (V29), (V20), and (V21) to an intermediate position of the dispensing piping for dispensing of detergent A and B and wash water to the cuvette.

The nozzle of the FB unit descends, detergent A, B and wash water are dispensed into the cuvette, and then the nozzle rises while (V19), (V20), (V21) become ON (OPEN) at the same time, and the liquid from the dispensing nozzle tip to the valve is aspirated to the liquid dripping aspiration terminal.

This prevents liquid dripping from the nozzle because of vibrations from vibrations because of up/down of the nozzle, etc.

When the nozzle of the FB unit rises, (V25) becomes ON (OPEN), the negative pressure in the dripping aspiration terminal is connected to the atmosphere, (V27) becomes ON (OPEN), and the liquid aspirated into the dripping aspiration terminal is discharged as diluted waste by gravity drop to the outside of the body.

2. Discharge of liquid from the vacuum tank

The liquid in the vacuum tank is discharged as diluted waste by gravity drop to the outside of the body by (V25), (V26) becoming ON (OPEN) with the vacuum pump (P6) in stopped condition after measuring operation and washing operations and then (V34) becoming ON (OPEN).

For the vacuum tank, a negative pressure is maintained by operating the vacuum pump directly before measuring operation and washing operation, and the sensor is checked (-150 mm Hg (about -20 kPa)), and in case of insufficient negative pressure, a corresponding error message is displayed on the CRT, the next operation is not performed, and an alarm is generated.

The vacuum tank has a sensor (float switch) checking the liquid level in the tank, checking is done directly before measuring operation and the various washings, and when the liquid level in the vacuum tank is in excess of the specified level, this is displayed on the CRT by an error message, the operation does not advance to the next operation, and an alarm is generated.

When the liquid level exceeds the specified level during analysis operation, an error message is displayed on the CRT, and the equipment stops after the specified time has expired.

3. Discharging from the wash tanks

The wash water from sample probe, reagent probe, and mixing bar is discharged as diluted waste by gravity drop to the outside of the body.

4. ISE unit discharge

The waste from the ISE unit is discharged as concentrated waste by gravity drop to the outside of the body.

5. Other discharge treatment

The waste from the GA unit, the DA unit, and the DC unit is discharged as diluted waste by gravity drop to the outside of the body.

Detergent supply quantity

1. Detergent A supply quantity
   - Supply quantity to the cuvette : 0.8 to 1.6 ml
     (Dispensing quantity to the cuvette) : (0.8 ml)

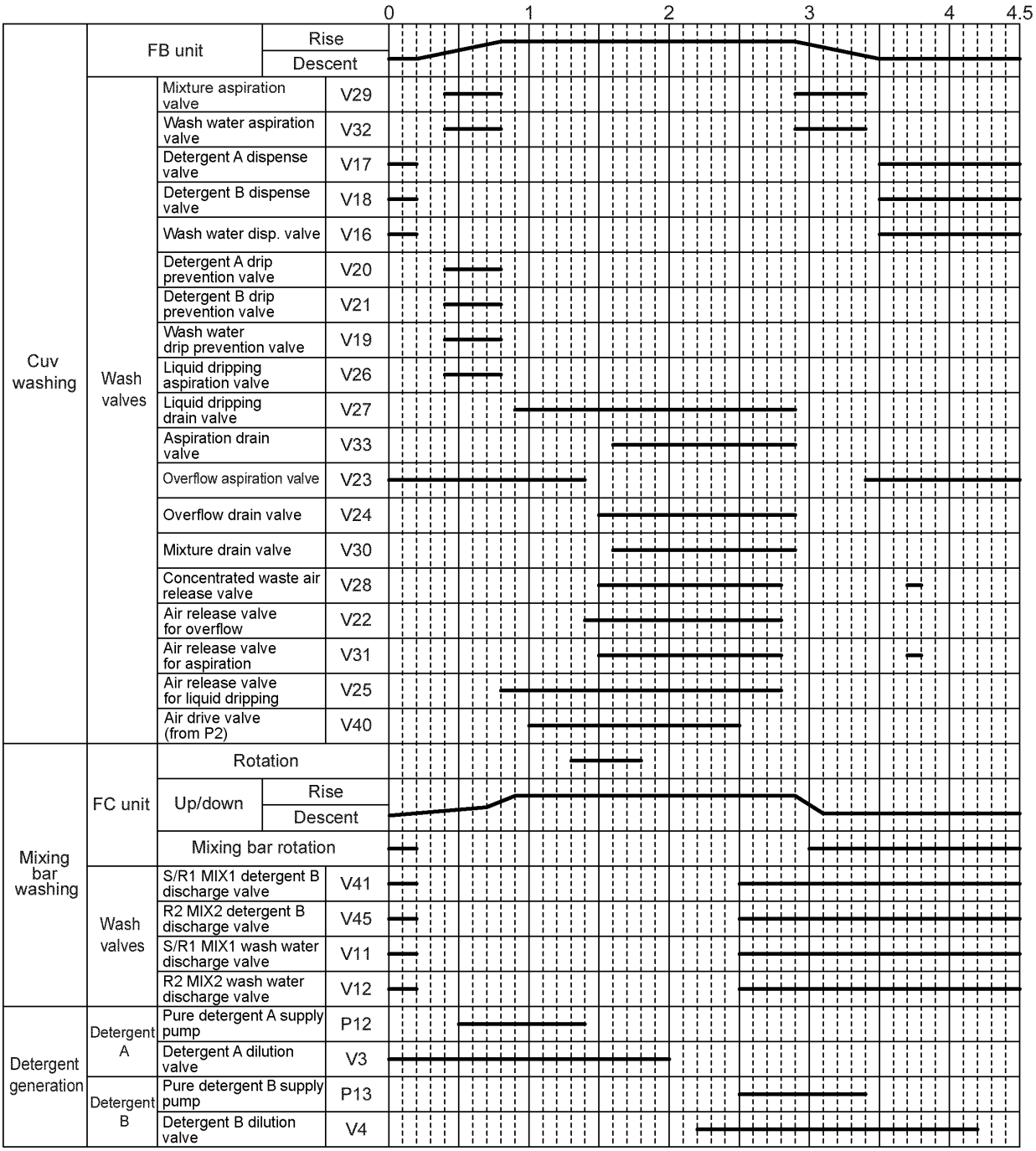
2. Detergent B supply quantity
   - Supply quantity to the cuvette : 0.8 to 1.6 ml
   - Supply quantity to the mixing bar wash tank : 3.2 to 4.2 ml

Deionized water supply quantity

1. Washing water supply quantity
   - Supply quantity to the cuvette : 0.8 to 1.6 ml
     (Dispensing quantity to the cuvette) : (0.8 ml)
   - Supply quantity to the S-probe wash tank : 2.0 to 3.0 ml
   - Supply quantity to the R-probe wash tank : 2.0 to 3.0 ml
   - Supply quantity to the mixing bar wash tank : 3.2 to 4.2 ml

■ Time Chart for the Piping of the Washing System

Cuvette washing, mixing bar washing



■ Operation Explanation

Analysis operation

(1) The sample is dispensed by the body sample probe into the dilution tube.

Sample type	Sample quantity	Push-out water quantity
Serum	20µl	10µl
Urine	25µl	10µl

(2) Diluent is discharged.

Sample type	Diluent quantity
Serum	618µl
Urine	750µl

(3) Mixing is done with the mixing bar.
(4) The mixed mixture is aspirated to the flow cell by the perister pump.
(5) The residual fluid in the dilution tube is discharged through the bypass tube, and preparations are made for the next sample.
(6) The potential of the Na electrode,the K electrode, and the Cl electrode is measured each in regard to the REF electrode.

Sample type	REF liquid quantity
Serum	120 ± 80µl
Urine	150 ± 100µl

(7) The mixture temperature is measured with a thermistor.
(8) MID-STD is dispensed into the dilution tube.

Sample type	MID-STD liquid quantity
Serum	650 to 850µl or more
Urine	800 to 1000µl or more

(9) Potential measuring for Na, K, and Cl electrodes and mixture temperature measuring are performed in the same way as for the sample.
(10) Concentration calculation is performed with the mixture potential after temperature compensation and the MID-STD potential.

Washing before analysis

(1) MID-STD is dispensed into the dilution tube.
(2) The mixed MID-STD is aspirated to the flow cell by the perister pump.
(3) The residual fluid in the dilution tube is discharged through the bypass tube, and preparations are made for the next sample.

Washing after analysis

(1) MID-STD is dispensed into the dilution tube.
(2) The mixed MID-STD is aspirated to the flow cell by the perister pump.
(3) The residual fluid in the dilution tube is discharged through the bypass tube, and preparations are made for the next sample.

Cleaning

(1) Cleaning liquid is dispensed into the dilution tube by the body sample probe.
(2) Diluent is dispensed into the dilution tube.
(3) Mixing is performed with the mixing bar and the dilution tube is washed.
(4) The mixed mixture is aspirated to the flow cell by the perister pump and the flow cell is washed.
(5) MID-STD is dispensed into the dilution tube.
(6) Mixing is performed with the mixing bar and the dilution tube is washed.
(7) The mixed mixture is aspirated to the flow cell by the perister pump and the flow cell is washed.

■DPR Hard ware

●SIO

SIO Standard 2ch

Port	Type	Purpose	Port address	IRQ
COM1	Standard	DPR-ANL com	0x3F8-0x3FF	4
COM2	Standard	ANL-DPR com	0x2F8-0x2FF	3
COM3	Extended board 1 Serial 1	On-line	0x3E8-0x3EF	9
COM4	Extended board 1 Serial 2	Modem	0x2E8-0x2EF	*
COM5	Extended board 2 Serial 1	Touch panel	0x2A0-0x2A7	11

SIO Standard 1ch

Port	Type	Purpose	Port address	IRQ
COM1	Standard	DPR-ANL com	0x3F8-0x3FF	4
COM2	Extended board 1 Serial 1	ANL-DPR com	0x2F8-0x2FF	3
COM3	Extended board 1 Serial 2	On-line	0x3E8-0x3EF	9
COM4	Extended board 2 Serial 1	Modem	0x2E8-0x2EF	*
COM5	Extended board 2 Serial 2	Touch panel	0x2A0-0x2A7	11

*: Caution It is different from each business area.
OAI, Japan: 10
ODH, Aus, Asia: 7

●parallel port

Choose correct working PIO under Windows-NT.

Port	Type	Purpose	Port address	IRQ
LPT1	Standard	Standard printer	0x378-0x37F	7
LPT2	Extended board	Option printer	0x278-0x27F	7

●HD

Choose correct working HD under Windows-NT.
HD(type IDE, EIDE) must be recognized by Windows-NT.
More than 1G bytes

●CRT

Choose correct working CRT under Windows-NT.
The CRT must be recognized by Windows-NT.
15 or 17 inches color
Support resolution 1024x768x65536.

●Sound

Choose correct working sound board under Windows-NT .

The sound board must be recognized by Windows-NT.
Variable volume speaker is included.

●Mouse

Choose correct working mouse under Windows-NT .

The mouse must be recognized by Windows-NT.

●MPU , RAM

Choose correct working MPU, RAM under Windows-NT .

MPU is more than Pentium 166MHz.
RAM is 48 Mbytes or more.

●Touch panel (Option)

Choose correct working touch panel under Windows-NT .

The touch panel must be recognized by Windows-NT.
Resolution can be set to 1024x768.
The touch panel must be recognized as a mouse under Windows-NT.
It is available to connect to SIO Standard, Extended board 1 or extended board 2.

●Modem (Option)

Choose correct working modem under Windows-NT .

The modem must be recognized by Windows-NT .
It is available to connect to SIO Standard, Extended board 1 or extended board 2

■MV1005 (Photometry control board)

- Functions

  Changes the wavelength of photometry signals (output by the photo detective board), changes the gain, and converts analog data to digital data

  Controls rotation of the cuvette wheel.

  High speed digital communication with the analyzer.

- Power sources

  + 5 V (for the digital circuits)

  ± 15 V (for the analog circuits)

  + 24 V (for rotating the wheel)

The following regulators are mounted on the board:

+15 V to +12 V (For the A/D converter)

-15 V to -12 V (For the A/D converter)

+24 V to +5 V (For the pulse motor controller)

- LED indicators

  No LED indicators

- Installation

  No required installation

- Adjustment

  The trimmer R61 is used to control the reference voltage for A/D conversion.

  Adjust the voltage at TP16 with respect to the TP17 (AGND) voltage to 10 V±0.5 mV.

  * For aging of the analog ICs, carry out this adjustment when 15 minutes or more have passed since power is supplied to the board.

  Basically, there are no adjustments in the field. The following adjustments, done at the factory for manufacturing purposes, are for your reference.

Connectors

J1 (210): Arcnet signals

J2 (211): Incubation bath origin sensor/stop position sensor signals

J3 (212): ±15 V power source

J4 (213): Photometry signals

J5 (214): 24 V power source

J6 (215): Pulse motor drive power

● Acquiring photometry data

- Gain 1 is used for photometry, in principle. When the light emitted by the lamp becomes dim or the sample liquid is seen dark, the gain is boosted. (A maximum of X128 binary)
- The gain of each element is not adjusted. Variance is corrected using the "Measure Reset" function.
- When the PDA output level is -6 V, non-processed data output by the A/D converter is regarded as OD0. The constant measured using the "Measure Reset" function is used for calculation.

[1] Measure Reset (Circuit constant measurement)

- Measurement is done to correct variance of the circuit constants due to parts difference, environments and aged deterioration.
- No correction is carried out in measurement of "Measure Reset". The offset is 0, and the gain is the default value.

- Measurement is done upon start of measurement and upon start of PHOTOCAL. [2] Changing gain
- The gain is changed according to the threshold values shown below.

×2	×4	×8	×16	×32	×64	×128
4.5 V (399AH)	2.25 V (1CCDH)	1.125V (0E66H)	562.4 mV (0733H)	281.4 mV (039AH)	140.7 mV (01CDH)	70.2 mV (00E6H)

[3] Non-processed data and OD values

- Non-processed data = $\{(\text{measured value} - Vos1) \div A_1 - V_{OS2}\} \div A_2$
- OD value = $\{42936\ (A7B8H) - LOG_{10}\ (\text{non-processed data})\} \times 10/6$

↑

When the PDA output level is -6 V

* The PDA offset value is not corrected.

● Details of each measurement commands

This board executes various operations according to commands issued by the ANL CPU. This section describes the details of the commands.

[1] Normal photometry

- Photometry is done at 29 points, i.e., P0, PX and P1 to P27.
- The wavelengths of photometry are as shown below:

Measurement point	P0,Px,P1-P27	P1	P2	P3
First half wavelength	Specified wavelength from ANL board	←	←	←
Last half wavelength	↑	λ3 & λ5 for LIH	λ7 & λ8 for LIH	λ9 & λ13 for LIH

- Preset wavelengths λ1 to λ13 are output to OUT21H. λ1 corresponds to OH, and λ13 corresponds to CH.
- The main wavelength and sub-wavelength specified from the ANL board are used for main and sub, respectively.

- The wavelengths λ3, λ7 and λ9 for LIH are used for main measurement. The wavelengths λ5, λ8 and λ13 for LIH are used for sub measurement.

[2] One time rotation photometry

- 143 cuvettes are measured continuously from cuvette No. 30 (PO).
- Four wavelengths are measured for each cuvette. (First half main: λ1, first half sub: λ2, last half main: λ3, last half sub: λ4)
- 13 wavelengths are measured for 143 cuvettes. 44 data are acquired at each wavelength.
- On completion of measuring 143 cuvettes, one time rotation (153 cuvettes) is carried out to return to the origin.

[3] DIAG photometry

- 13 cuvettes are measured continuously from cuvette No. 30 (PO).
- One wavelength is measured for each cuvette. (The same wavelength is measured on the main and sub sides.)
- The last half is measured at the same wavelength as used for the first half. However, data is not used (i.e., abandoned).
- On completion of measuring 13 cuvettes, one turn rotation (153 cuvettes) is carried out to return to the origin.

[4] Stationary photometry

- A cuvette which crosses the optical axis is measured.
- Measurement is done at all of 13 wavelengths. Non-processed data, measurement gain and OD values are output. (If the incident light is blocked, the conventional 0% photometry is performed.)

  (If you rotate the cuvette wheel half pitch, holder (between cuvette and cuvette) crosses optical route.)

  * Photometry method in one cuvette

  Others

[1] Wheel initialization

- The wheel is stopped when ten pulses have been generated since the origin is detected.

[2] Analog switches

- Observe the following concerning selection of D/A, PDA and GND, PGA gain switching, X1/X16 amplifier switching, and wavelength switching:
  1) Be sure to set the total gain to ×1 before changing the wavelength.
  2) Do not select two or more ×1 and ×16 amplifiers on either the main or sub side.

[3] Wheel rotation parameters (such as the number of pulses, pulse rate, etc.)

- See the photometry control specifications in the firmware specification or system program specification.

■ MV1006 (Photo detect board)

- Functions

  ±15 V is input to this board to supply ±6 V to the photo-diode array.

  Signals of the photo-diode array are output to the connector.

- Power source

  ±15 V (±6 V is generated internally for the photo-diode array.)

- LED indicators

  No LED indicators

- Installation

  No setting or adjustment is required.

- Precautions for replacement

  This board is a part of the photometry system. It is quite delicate to adjust the position of this board. Never dismount the board separated with the cast frame from the GA unit. Be sure to dismount the cast frame.

  When mounting the cast frame, use the specified jig and follow the adjustment manual.

- Connectors

J1: 218

A1	+15 V	B1	±15 VGND
A2	±15 VGND	B2	
A3	-15 V	B3	
A4	(reserved)	B4	
A5	λ13 output	B5	
A6	λ12 output	B6	
A7	λ11 output	B7	
A_{16}	λ2 output	B_{16}	
A_{17}	λ1 output	B_{17}	±15 VGND

Overview of elements used

Function	Model name	Manufacturer	Rating	Power consumption
PDA	L4H6100	Olympus	Source voltage: ±6 V, 13-wavelength output, 32-pin	17.5 mA
Regulator	78L06, 79L06	Hitachi	100 mW, surface mount type (TO-23)	6 mA
Inductor	CD75	Sumida	56 μH, 0.6 A, surface mount type	———

■ MV1013 (Reagent refrigerator control board)

- Functions

  The reagent refrigerator control board MV1013 controls rotation of the R1 refrigerator, receives signals from the sensors and sends mechanism statuses to the ANL CPU according to commands received from the ANL CPU through an optical cable. (Sensors: Rotation origin, stop 33, stop 48, cover open, and bottle detection)

The reagent refrigerator control board MV1013 controls rotation of the R2 refrigerator, receives signals from the sensors and sends mechanism statuses to the ANL CPU according to commands received from the ANL CPU through an optical cable.

The reagent refrigerator control board MV1013 controls the cuvette washing unit (FB), receives signals from the sensors and sends mechanism statuses to the ANL CPU according to commands received from the ANL CPU through an optical cable. (Sensors: Cleaning upper position, and downward motion check)

- Power source

  +24 VDC (for driving the pulse motor)

  +5 VDC power source for the digital ICs is produced by a DC to DC converter mounted on the board.

- Switch

  S1: CPU resetting (Not mounted on the board since it is not used.)

- Installation

  No installation is required.

- LED indicators

  DS1 RUN (green): Lit up while the CPU executes the program.

  DS2 COM (green): Blinks while the communication system is checked after resetting.

  DS3 ERR (red):

  DS4 ST0 (red): These LEDs indicate communication status as shown below

  DS5 ST1 (red):

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory,or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connectors

  J1 (780): +24 V power source
  J2: (Not mounted.)
  J3 (782): DA01 sensor input
  J4 (687): FB01 sensor input
  J5 (792): DA11 sensor input
  J6 (688): (Not provided.)
  J7 (781): DA01 (R1) pulse motor power
  J8 (791): DA11 (R2) pulse motor power
  J9 (686): FB01 up/down motion pulse motor power
  J10: (Not mounted.)
  J11: (Not mounted.)
  J12: (Not mounted.)
  J13: (Not mounted.)

■ MV1014 (Mix control board)

- Functions

The mix control board MV1014 controls mix No. 1, receives signals from the sensors and sends mechanism statuses to the ANL CPU according to commands received from the ANL CPU through an optical cable. (Sensors: M1 upper position, M1 origin, and M1 stop position)

The mix control board MV1014 controls mix No. 2 and cleaning pump, receives signals from the sensors and sends mechanism statuses to the ANL CPU according to commands received from the ANL CPU through an optical cable. (Sensors: M2 upper position, M2 origin, M2 stop position, EC upper position, and EC lower position)

- Power source

+24 VDC (for driving the pulse motor)

+5 VDC power source for the digital ICs is produced by a DC to DC converter mounted on the board.

- Switch

S1: CPU resetting

- Installation

No installation is required.

- LED indicators

DS1 RUN (green): Lit up while the CPU executes the program.

DS2 COM (green): Blinks while the communication system is checked after resetting. Goes out when communication system check ends abnormally. Goes on when check ends normally.

DS3 ERR (red):

DS4 ST0 (red): These LEDs indicate communication status as shown below.

DS5 ST1 (red):

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory, or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connectors

M1/EC1

J1 (660): +24 V power source
J2: (Not connected.)
J3 (664): Mix No. 1 sensor input
J4 (667): Cleaning pump sensor input
J5 (665): Mix No. 1 sensor input
J6: (Not mounted.)
J7 (661): Mix No. 1 up/down PM power
J8 (662): Mix No. 1 agitator rotation PM power
J9 (663): Mix No. 1 PM power
J10 (666): Cleaning pump AM power
J11: (Not mounted.)
J12: (Not mounted.)
J13: (Not mounted.)

M2

J1 (680): +24 V power source
J2: (Not mounted.)
J3 (684): Mix No. 2 sensor input
J4: (Not mounted.)
J5 (685): Mix No. 2 sensor input
J6: (Not mounted.)
J7: (681): Mix No. 2 up/down PM power
J8 (682): Mix No. 2 agitator rotation PM power
J9 (683): Mix No. 2 PM power
J10: (Not mounted.)
J11: (Not mounted.)
J12: (Not mounted.)
J13: (Not mounted.)

■ MV1019 (ANL control board)

- Functions

1-1 Bus connector interface

Fig. 1 shows the bus interface with the CPU board.

1-2 Arcnet interface

The token passing type local area network Arcnet is used to interface with the photometry control board. The clock frequency is 16 MHz.

1-3 Optical communication interface

The sub-CPU (HD64180S) of this interface controls optical communication. This interface is connected with the CPU (V53A) through a dual-port RAM.

1-4 ISE and bar code interface

This interface controls the ISE and five bar code readers connected through RS-232C and converts analog temperature signals of the thermostatic chamber and cooler into digital signals. A sub-CPU (HD64180) provides control. This interface is connected with the CPU (V53A) through a dual-port RAM.

1-5 DPR interface

This interface is connected with the DPR through two serial ports. The DSR is also connected with the alarm circuit and turns on and off two types of alarm sounds.

1-6 Power control panel interface

This interface drives relays according to the /EXPOON and /EXPWOF signals output by the CPU (V53A) to turn on and off the power of the ANL control system. It does not control the power of the CPU board, refrigerator, etc. which always remains on.

1-7 Other I/Os

24 VDC solenoid valves, counter drive circuit (36-channel), photo-coupler input AC driver circuit (12-channel), float switch signals input (16-channel), and I/ F signals input from the ISE (6-channel)

- Power sources

5 V: Power source of the digital signal system

±15 V: Used for processing temperature signals and other analog signals.

24 V: Power source for driving the DC valves

- Switches

S1: 4-bit DIP switch

The AU640 does not use this DIP switch. Thus, set all bits to zero (OFF).

S2: Reset

Resets the ISE bar code (option) interface CPU.

- LED indicators

  DS1: I. RUN (ISE I/F, CPU RUN)

  DS2: ISTO (Illuminates while communication takes place between ISE and ANL)

  DS3: I.ERR

  DS4: W. DIS (Incubation bath rotation disable signal)

  DS5: W. ACT (Incubation bath rotating signal)

  DS6: C. RUN (Optical communication primary station CPU RUN)

  DS7: COM (Optical communication interruption signal)

  DS8: ERR

  DS9: ST0

  DS10: ST1

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory,or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

■ Jumpers

- JP1 to JP8: Open all jumpers since they are not used for the standard AU640 functions.

■ Connectors

J1: 370 +5 and ±15 V power sources

J2: 371 24 V power source

J3: 363 (Not connected.)

J4: 373 (Not connected.)

J5: 374 (Not connected.)

J6: 375 ISE interface

J7: 376 Bar code interface

J8: 377 Temperature signal input

J9: 378 DPR interface

J10: 379 Arcnet interface (to MV1005)

■ MV1024 (AC driver board)

- Functions

  Sensor input signals

  - Four float switch input signals x 3 (deionized water tank, detergent A tank and detergent B tank)
  - One float switch input signal x 5 (Original detergent A tank, original detergent B tank, vacuum tank, forced drain tanks 1 and 2:.)
  - Pressure switch (PS4-102V) Bias Control
  - Four DC pumps (Controlled according to signals from the ANL. Detergent A and B supply pumps are stopped forcedly when the detergent A and B tanks become empty. The detergent dilution pump is stopped forcedly when detergent overflows in either the detergent A tank or detergent B tank.)
  - Four AC solenoid valves

    Two of four are controlled according to signals from the ANL. The other two (water supply valve and OPD) are controlled locally according to the sensor statuses.
  - One vacuum pump (Controlled according to signals from the ANL.)
  - One degasser (Controlled according to signals from the ANL.)
  - Each two AC and DC bias can be added and controlled according to signals from the ANL.

- Power sources

  100 VAC , +24 VDC, +15 VDC (for analog circuits)

  +5 VDC (for digital circuits Supplied via the ANL signal cable)

- Switch, trimmer and jumper None

- LED indicators

  DS1: Detergent A pump ON

  DS2: Detergent B pump ON

  DS3: Deionized water pump ON

  DS4: Detergent dilution pump ON

  DS5:(Unused.)

  DS6:(Unused.)

  DS7:(Unused.)

  DS8:(Unused.)

  DS9: OPD ON

  DS10: Water supply valve ON

  DS11: Vacuum pump ON

  DS12: Degasser ON

  DS13: (Unused.)

  DS14: (Unused.)

■ MV1025 (DC valve relay board)

- Function

  The DC valve relay board MV1025 relays the DC valve drive wires from the ANL control board MV1019 and transmits signals to each DC valve.

- Power source

  No power is supplied to this board.

- LED indicator

  No LED indicator is used.

- Installation

  No installation is required.

■ External connection

Relay board 1			Relay board 2			Relay board 3	
310			330	V30		350	V32
311	V41		331	V24		351	V29
312			332	V10		352	V17
313			333	V12		353	V18
314	V3		334			354	V28
315	V4		335	V45		355	V22
316	V5		336	V16		356	V31
317	V6		337	V20		357	V25
318	V7		338	V21		358	V23
319	V11		339	V19		359	V26
320			340	V33		360	V34
321			341	V27		361	Sample counter
322	Common		342	Common		362	Common

■ MV1041 (ISE analog board)

- Function

  1 Signals from 3 electrodes, Na, K, and Cl are input into this board.

  2 Thermistor signals are input into this board.

  3 Conducts A/D conversions of the 4 analog signals, mentioned above, in 16 bits.

  4 Converts DC5V input, first, into ±12V, with a DC to DC converter, and then, converts it into ±5V and +5V.

  5 Communicates with the ISE and CPU in a current loop.

- Power source

  ±12V for the power source for analog circuit is generated from +5V

- Connectors

  J1: 111 +5V power supply input

  J2: 112 A/D data output signal and A/D control signal (To MV1040)

  J3: 113 Analog signal output (for the monitor)

  J4: 114 Na electrode voltage input

  J5: 115 Na electrode voltage input (reference electric potential)

  J6: 116 K electrode voltage input

  J7: 117 K electrode voltage input (reference electric potential)

  J8: 118 C1 electrode voltage input

  J9: 119 C1 electrode voltage input (reference electric potential)

  J10: 120 REF electrode voltage input

  J11: 121 REF electrode voltage input (reference electric potential)

  J12: 122 Thermistor signal input

- LED indicators/ Installation and adjustment

  There are no LEDs /installation for adjustment

■ MV1950 (EF temperature control board -- for LVD)

- Functions

  Input thermistor signals (Deionized water and R2 heating units).

- Heater drive control based on each thermistor signal. Details of control

  1 Control the EF block's temperature to be 52 °C (sensor position).

  2 Control the temperature of the deionized water to be 28°C (sensor position).

  Temperature control of the EF block is done only for R2, but not for R1.

  This is because doing so will create a gap between the stable temperature after R1 mixing and that after R2 mixing.

  The temperature of the deionized water is controlled because the temperature cannot be stabilized if cold water came in directly.

- Power source

  ±15 V (Analog circuit power)

  100 VAC (Heater power)

- LED indicators

  DS2: Deionized water heater: ON.

  DS3: R2 heater: ON.

  * DS1 and DS4 are not mounted.

- Installation (Jumper setting)

  The functions and default setting are as shown below:

  JP1 to JP16: Open all jumpers, because they are not used by the AU640 at present.

- Trimmer adjustment

The trimmer adjustment is as shown below:

R29
R30
R31
R32
R33
R34

} If necessary, it will be given some instruction.

- Connectors

  J1 (831):Deionized water thermistor signal input

  J2 (830):±15 V power input

  J3 (832):R2 thermistor signal input

  J4 (836):(Not mounted.)

  J5 (837):(Not mounted.)

  J6 (833):(not used)

  J7 (834):(Not mounted.)

  J8 (835):(not used)

  J9 (838):(Not mounted.)

  J10 (826):100 VAC input

  J11 (837):Deionized water heater driver

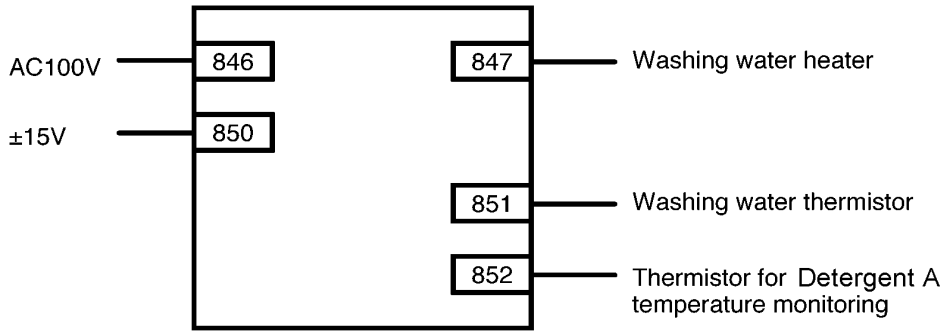
  J12 (829):R2 heater power

■ MV1951 (Washing water heating control board)

Outline

This is the circuit board for heating control for the washing water, and it performs heater drive control on the basis of signals from two thermistors arranged in the washing water flow path.
A hybrid IC (DI1936) is used for thermistor signal processing.

External connection status



Functions

Thermistor (2 locations) signal input

Heater drive control on the basis of the signals from each thermistor

Control contents

The water temperature of the washing water heating section is controlled as follows in regard to the temperature of the detergent A

Temperature of detergent A	Water temperature
18°C	62°C
32°C	44°C

The temperature balance between detergent A and washing water is maintained to keep the cuvette wheel at a constant temperature.

Power supply

±15 V (power supply for analog circuits)

AC 100 V (heater power supply)

LED indication

DS1 : Washing water heater ON/OFF

DS2 to DS4 : Not installed

Connector composition

J1	(851)	Washing water thermistor
J2	(850)	±15 V
J3	(852)	Thermistor for monitoring
J4	(Open)	(Not installed)
J5	(Open)	(Not installed)
J6	(Open)	(Not installed)
J7	(Open)	(Not installed)
J8	(Open)	(Not installed)
J9	(Open)	(Not installed)
J10	(846)	AC 100 V
J11	(847)	Washing water heater
J12	(Open)	(Not installed)

Installation

None

Adjustment

The plant adjustments are shown in the following for reference.

U2, pin 20

- Standard : 0.50 ±0.01 V
- Adjustment : Adjust R31 so that the voltage at pin 20 of U2 becomes 0.50 V. (Deviation from this value by later adjustment is possible)

U3, pin 5

- Standard : -0.55 ±0.01 V
- Adjustment : Adjust R32 so that the voltage at pin 5 of U3 becomes -0.55 V. (Deviation from this value by later adjustment is possible)

TP11

- Standard : 0.16 ±0.01 V
- Adjustment : Adjust R34 so that the voltage difference at the test terminal TP11 becomes 0.16 V when a resistance of 1656 Ω and when a resistance of 3109 Ω is connected between pins 1 and 2 of the connector J3. (About 0.587 V with a resistance of 1656 Ω and about 0.425 V with a resistance of 3109 Ω) (Deviation from this value by later adjustment is possible)

TP4

- Standard : 7.50 ±0.5 V
- Adjustment : Adjust R32 so that the voltage at the test terminal TP4 becomes 7.5 V when a resistance of 1656 Ω is connected between pins 1 and 2 of the connector J3 and a resistance of 2223 Ω is connected between pins 1 and 2 of the connector J1, and record the voltage at TP11. This voltage shall be V1. (V1 is about 0.588 V) (Deviation from this value by later adjustment is possible)

TP4

- Standard : 7.50 ±0.5 V
- Adjustment : Adjust R32 so that the voltage at the test terminal TP4 becomes 7.5 V when a resistance of 3109 Ω is connected between pins 1 and 2 of the connector J3 and a resistance of 1648 Ω is connected between pins 1 and 2 of the connector J1, and record the voltage at TP11. This voltage shall be V2. (V2 is about 0.426 V) (Deviation from this value by later adjustment is possible)

TP11

- Standard : V1 ±0.01 V (J3: 1656 Ω), V2 ±0.01 V (J3: 3109 Ω)
- Adjustment : Adjust R31, R32, and R34 so that the voltage at the test terminal TP11 becomes V1 when a resistance of 1656 Ω is connected between pins 1 and 2 of the connector J3 and that it becomes V2 when a resistance of 3109 Ω is connected. (Deviation from this value by later adjustment is possible)
  However, when R32 is turned clockwise, the voltage difference at TP11 increases when the resistor connected to J3 is switched. When R31 and R32 are turned clockwise, the voltages increase in the same way when the resistance connected to J3 is switched. R32 is for fine adjustment and R31 is for coarse adjustment

Relation between thermistor and resistance value (reference)

Thermistor on the J1 side : DT0639 MT-2A
1648 Ω = 62°C, 2223 Ω = 44°C

Thermistor on the J3 side : DT0608 YSI4403
3109 Ω = About 18°C, 1656 Ω = About 32°C

* Thermistor on the J1 side and resistance value

Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω	Temperature °C	Resistance Ω
30.0	2819	40.0	2381	50.0	2007	60.0	1701	70.0	1459
31.0	2773	41.0	2340	51.0	1973	61.0	1674		
32.0	2727	42.0	2300	52.0	1940	62.0	1648		
33.0	2682	43.0	2261	53.0	1908	63.0	1622		
34.0	2637	44.0	2223	54.0	1877	64.0	1597		
35.0	2593	45.0	2185	55.0	1846	65.0	1573		
36.0	2549	46.0	2148	56.0	1816	66.0	1549		
37.0	2506	47.0	2112	57.0	1786	67.0	1526		
38.0	2464	48.0	2076	58.0	1757	68.0	1503		
39.0	2422	49.0	2041	59.0	1729	69.0	1481		

■ MV1986 (GA temperature control board)

- Functions

  Thermistor signal input.

  Controls the fan and heater drive power based on thermistor signals.

  Outputs of temperature information (to the MV1019).

- Details of control

  In order to control the reaction temperature of the sample liquid at 37± 0.1°C,

  1 Control the coolant temperature, in the coolant heating unit, to 37.5±0.2°C (sensor position).

  2 Rotate the fan whenever the sensor, near the fan at the center of the rear side, becomes 35°C or more.

  * Control of the fan, at the bottom right of the rear side, is for preventing a runaway in the temperature of the incubation bath.

  The position of sensor is shifted from near right-lower fan to near center-fan at rear cover

- Power source

  ±15 V (Analog circuit power)

  100 VAC (Fan and heater power)

- LED indicators

  DS1(not used)

  DS2(main heater “ON”)

  DS3(FAN “ON”)

  DS4(Alarm “ON”)

- Installation (Jumper setting)

  JP1 to JP16: Open all jumpers, which are not used by the AU640. If necessity of service works using the jumpers arises, a separate instruction will be given.

- Trimmer adjustment

The following trimmers for adjustment exist, but adjustments are not made in the field.

R29
R30
R31
R32
R33
R34

} Adjustments are done with dedicated tools upon manufacture.

- Connectors

  J1 (811): GA thermistor signal input
  J2 (810): ±15 V power input
  J3 (812): ANL internal thermistor signal input
  J4 (816): (Not necessary)
  J5 (817): (Not necessary)
  J6 (813): GA temperature signal output (to MV1019)
  J7 (814): (Not necessary)
  J8 (815): (Not necessary)
  J9 (818): (Not necessary)
  J10 (806): 100 VAC input
  J11 (807): Heater power (Main and sub)
  J12 (809): Fan drive

■ MV2076/ 3268 (R1 Liquid level detection PCB)

- Function

  R2 Liquid level detection (Oscillator side)

  Using different frequency to avoid interference of frequency.

  R1(MV2076): 8.9kHz, R2(MV2712) : 6.6kHz

- Power Supply

  Analog +/-15v from PS2.

- LED indication

  DS1: Level detection signal

- Installation

  No installation.

- Connectors

  J1 (441): ±15 V power input
  Level detection signal Hold
  Level detection signal input

- Difference between MV2076 and MV3268

  MV2076 (Varistor is not on PCB) for M521, MV3268 (Varistor is on PCB) for M526.

■ MV2190 (ISE control board)

- Function

  1Mbit FLASH MEMORY (4Mbit also accepted)

  256 kbit RAM

  Communication speed of 4800 BPS with analyzer CPU and RS232C

  Program loading from the host CPU to FLASH MEMORY is possible

  4 pulse motors can be operated

  3 solenoid valves can be operated

  Data on the analog board is received in serial communication

  ISE READY signals can be monitored by an LED

  Residual reagent detection signals can be monitored by an LED (However, they are not captured into the CPU).

  DC24V and DC5V are input as power supplies

  Sample liquid intake amount can be adjusted by a rotary code switch

  Reading of sample liquid overflow sensor is possible

- Power supplies

  +5V (for the digital system) Supplied from PS1

  +24V (for DC load drive) Supplied from PS3

- LED indicators

  DS1: CPU RUN signal

  DS2: "ON" signal for the No. 1 diluted liquid solenoid valve ("IN" side)

  DS3: "ON" signal for the No. 2 diluted liquid solenoid valve ("OUT" side)

  DS4: "ON" signal for the diluted liquid flow path switching solenoid valve

  DS5: "ON" signal for the REF liquid solenoid valve

  DS6: Sample liquid overflow signal

  DS7: Diluted liquid dispenser upper pos. sensor signal

  DS8: Diluted liquid dispenser flower pos. sensor signal

  DS9: Mid standard level detection signal

  DS10: REF level detection signal

  DS11: Diluted liquid level detection signal

  DS12: Auxiliary input signal

  DS13: TxD signal to ANL main CPU

  DS14: RxD signal

- Installation

  Rotary code switch

  Rotary switch for setting the intake amount of the sample liquid suction pump.

  Regularly, the 2 switches (SW3 and SW4) are set at SW=8.

  Dip switch

  4 bit Dip switch for system setting.

  To be sure, since the AU640 is not equipped with this function, every bit should be "OFF."

  In the case of ISE loading is failure, #3 and #4 bit makes OFF for BCC check not available.

  Caution!

In the market, the dip switch direction of some instruments is opposite.

  Reset switch

  Switch for resetting CPU: SW1

  Jumper

  JP1 : Should be "SHORT" in the AU640.

  (It is not necessary to deal with this since it is already patterned "SHORT")

- Adjustment

  No adjustments are required.

- Connectors

  J1 (101) : 24V power supply input

  J2 (102) : +5V power supply input

  J3 (103) : A/D data and A/D control signals (To MV1041)

  J4 (104) : Pulse motor drive

  J5 (105) : Sensor input

  J6 (106) : ANL interface

  J7 (107) : ANL interface communication monitoring signal (normally disconnected)

  J8 (108) : (used for manufacturing purpose)

- Connection between ISE and ANL

  BUFF/REF/MID level detection

  RD, TD, Sync

  ISE, ON

  ANL ON

  ISE READY

■ MV2329 (R1/ R2 Probe transfer control board)

- Functions

  The probe transfer control board MV2329 controls reagent 1 feed up-down motion and rotation, receives signals from the sensors, including liquid level detection, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable).
  (Sensors: Rotation origin(washing pos), rotation bottle pos., cuv. pos., upper pos., lower pos.)

  The probe transfer control board MV2329 controls the reagent 2 feed up-down motion and rotation, receives signals from the sensors, including liquid level detection, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable).
  (Sensors: Rotation origin(washing pos), rotation bottle pos., cuv. pos., upper pos., lower pos.)

- Power source

  +24 VDC (for driving the pulse motor)

  +5 VDC power source for the digital ICs is generated by a DC to DC converter mounted on the board.

- Switch

  S1: CPU resetting

- Installation

  No installation is required.

- LED indicators

  DS1 RUN (green): Lit up while the CPU executes the program.

  DS2 COM (green): Blinks while the communication system is checked after resetting.
  Goes out when communication system check ends abnormally.
  Goes on when check ends normally.

  DS3 ERR (red):
  DS4 ST0 (red): These LEDs indicate communication status as shown below.
  DS5 ST1 (red):

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory, or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connectors

  J1 (620, 640): +24V power source
  J2: (Not mounted.)
  J3 (625, 645): Level sensor signal input
  J4: (Not mounted.)
  J5 (637, 657): Crash sensor input
  J6 (624, 644): Level sensor signal input
  J7 (621, 641): Up/down PM power
  J8 (623, 643): Probe transfer sensor input
  J9 (622, 642): Rotation PM drive signal (to 5PM driver)
  J10: (Not mounted.)
  J11: (Not mounted.)
  J12: (Not mounted.)
  J13: (Not mounted.)

■ MV2344 (Rack and STAT control board)

- Functions

  The rack and STAT control board MV2344 controls the rack feeding unit (CA01), receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Feeding pitch, receiving pitch, repeat run arrival, rack presence/absence, and rack class)

  The rack and STAT control board MV2344 controls the rack feeder (CB01), receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Rack detection, rack step1(ID), rack step2(S), and sample cup)

  The rack and STAT control board MV2344 controls the ID pawl feeding unit (CG01), receives signals from the sensor, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensor: rack step unit (ID) origin)

  The rack and STAT control board MV2344 controls the S pawl feeding unit (CG01), receives signals from the sensor, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensor: S pawl feeding unit (S) origin)

  The rack and STAT control board MV2344 controls the STAT (DC01), receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: STAT origin, stop position, and STAT cup detection)

- Power source

  +24 VDC (for driving the pulse motor)

  +5 VDC power source for the digital ICs is produced by a DC to DC converter mounted on the board.

- Switch

  S1: CPU resetting (Not used. Not mounted on this board.)

- Installation

  No installation is required

- LED indicators

  DS1 RUN (green): Lit up while the CPU executes the program.

  DS2 COM (green): Blinks while the communication system is checked after

  resetting. Goes out when communication system check ends abnormally. Goes on when check ends normally.

  DS3 ERR (red):

  DS4 ST0 (red): These LEDs indicate communication status as shown below.

  DS5 ST1 (red):

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory, or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connectors

  J1 (900): 24V input
  J2: (Not connected.)
  J3 (912): Rack class input (CA01)
  J5 (917): Sensor input from CD01
  J6 (914): Rack step (ID) sensor input (CG01)
  J7 (915): Sensor input (Sample aspiration position)
  J8 (916): STAT sensor input (DC01)
  J9: (Not mounted.)
  J10 (911): Rack feeding sensor input (CA01)
  J11 (913): Rack feeder sensor input (CB01)
  J12: (909) I/F signal with LA, Rack step feed normal / abnormal signal
  J13 (901): Rack feeding unit PM power (CA01)
  J14 (902): Rack feeder belt drive (CB01)
  J15 (905): STAT rotation PM power (DC01)
  J16: (Not mounted.)
  J17 (903): Rack step(ID) motor power (CG01)
  J18 (904): Rack step(S) unit PM power (CG01)
  J19: - J24 (Not mounted.)
  J25: Rack step detection sensor input

■ MV2345 (Automatic repeat run control board)

- Functions

  The automatic repeat run control board MV2345 controls the rack buffer (CC01), receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Feeding pitch, receiving pitch, and rack control)

  The automatic repeat run control board MV2345 controls the repeat run line (CD01), receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: repeat run rack detection)

  The automatic repeat run control board MV2345 controls the rack receiver (CE01), receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Standby position, pushing origin, and rack full)

- Power source

  +24 VDC (for driving the pulse motor)

  +5 VDC power source for the digital ICs is generated by a DC to DC converter mounted on the board.

- Switch

  S1: CPU resetting

- Installation

  No installation is required.

- LED indicators

  DS1 RUN (green): Lit up while the CPU executes the program.

  DS2 COM (green): Blinks while the communication system is checked after resetting. Goes out when communication system check ends abnormally. Goes on when check ends normally.

  DS3 ERR (red):
  DS4 ST0 (red):
  DS5 ST1 (red):

  These LEDs indicate communication status as shown below.

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory, or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connector

  J1 (920): +24 V power source
  J2-J3: (Not mounted.)
  J4 (927): CC sensor input
  J5 (928): CC sensor input
  J6 (929): CC sensor input
  J7: (Not mounted.)
  J8 (934): Cd sensor input
  J9 (933): CE sensor input
  J10 (931): CC sensor input
  J11 (932): Line sensor input (CD01)
  J12: (Not mounted.)
  J13 (921): Rack buffer PM power (CC01)
  J14 (922): (Not mounted.)
  J15 (935): CD rack send
  J16 (923): Pusher PM power (CE01)
  J17 (925): Pure detergent A supply pump
  J18 (926): Pure detergent B supply pump)
  J19 (924): Stopper PM drive power (CD01)
  J20: (Not mounted.)
  J21: (Not mounted.)
  J22: (Not mounted.)
  J23: (Not mounted.)

■ MV2346 (Dispenser control board)

- Functions

  The dispenser control board MV2346 controls the sample dispenser, receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Upper position, and lower position)

  The dispenser control board MV2346 controls the R1 dispenser, receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Upper position, and lower position)

  The dispenser control board MV2346 controls the R2dispenser, receives signals from the sensors, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable). (Sensors: Upper position, and lower position)

- Power source

  +24 VDC (for driving the pulse motor)

  +5 VDC power source for the digital ICs is produced by a DC to DC converter mounted on the board.

- Switch

  S1: CPU resetting

- Installation

  No installation is required.

- LED indicators

  DS1 RUN (green): Lit up while the CPU executes the program.

  DS2 COM (green): Blinks while the communication system is checked after resetting

  Goes out when communication system check ends abnormally. Goes on when check ends normally.

  DS3 ERR (red):
  DS4 ST0 (red): These LEDs indicate communication status as shown below.
  DS5 ST1 (red):

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory, or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connectors

  J1 (700): +24V power source
  J2: (Not mounted.)
  J3 (705): R1 dispenser sensor input
  J4 (703): S dispenser sensor input
  J5 (707): R2 dispenser sensor input
  J6 (721): S cloggong sensor input
  J7 (704): R1 dispenser up/down PM power
  J8 (706): R2 dispenser up/down PM power
  J9 (702): S dispenser up/down PM power
  J10 (722): S cloggong sensor input
  J11: (Not mounted.)
  J12: (Not mounted.)
  J13: (Not mounted.)

■ MV2347 (S Probe transfer control board)

- Functions

  The probe transfer control board MV2347 controls sample transfer up-down motion and rotation, receives signals from the sensors, including liquid level detection, and sends mechanism status to the ANL CPU according to commands received from the ANL CPU (via an optical cable).
  (Sensors: Rotation origin(washing pos), rotation rack pos., STAT pos., cuv. pos.)

- Power source

  +24 VDC (for driving the pulse motor)

  +5 VDC power source for the digital ICs is generated by a DC to DC converter mounted on the board.

- Switch

  S1: CPU resetting

- Installation

  No installation is required.

- LED indicators

  DS1 RUN (green): Lit up while the CPU executes the program.

  DS2 COM (green): Blinks while the communication system is checked after resetting.
  Goes out when communication system check ends abnormally.
  Goes on when check ends normally.

  DS3 ERR (red):
  DS4 ST0 (red): These LEDs indicate communication status as shown below.
  DS5 ST1 (red):

ERR	ST1	ST0	Status
OFF	OFF	ON	Transmission interrupt processing
OFF	ON	OFF	Reception interrupt processing
OFF	ON	ON	Checking the memory, or down-loading
ON	OFF	OFF	Memory check error, or line disconnected
ON	OFF	ON	Transmission error
ON	ON	OFF	Reception error
ON	ON	ON	Trap interrupt occurs. (ST1 and ST0 blink.)

- Adjustment

  No adjustment is required.

- Connectors

J1 (600):	+24V power source
J2:	(Not mounted.)
J3 (605):	Level sensor signal input
J4:	(Not mounted.)
J5 (617):	Downward motion sensor input
J6 (604):	Level sensor signal input
J7 (601):	Up/down PM power
J8 (603):	Probe transfer sensor input
J9 (602):	Rotation PM drive signal (to 5PM driver)
J10:	(Not mounted.)
J11:	(Not mounted.)
J12:	(Not mounted.)
J13:	(Not mounted.)

■ MV2354/ 3269 (S Liquid level detection board)

- Functions

  Produces and outputs oscillation signals.

  Receives analog signals detects by the probes.

  Processes and detected signals.

  Outputs detected signals (DIGITAL) to the S probe control board.

- Power source

  ±15 V is input. AC signals for the oscillation electrodes are generated internally.

- LED indicators

  DS1: Level

- Installation and adjustment

  No installation is required.

- Connectors

  J1 (440): ±15 V power input
  Level detection signal Hold
  Level detection signal input

- Difference between MV2354 and MV3269

  MV2354 (Varistor is not on PCB) for M521, MV3269 (Varistor is on PCB) for M526.

■ MV2712 (R2 Liquid level detection PCB)

- Function

  R2 Liquid level detection (Oscillator side)

  Using different frequency to avoid interference of frequency.

  R1(MV2076): 8.9kHz, R2(MV2712) : 6.6kHz

- Power Supply

  Analog +/-15v from PS2.

- LED indication

  DS1: Level detection signal

- Installation

  No installation.

- Connectors

  J1 (442): ±15 V power input
  Level detection signal Hold
  Level detection signal input

- Difference between MV2712 and MV3270

  MV2712 (Varistor is not on PCB) for M521, MV3270 (Varistor is on PCB) for M526.

■ UDCD31A (Power control PCB)

- Function

  Pressing ON switch supplies each configuration element of system with power.

  Pressing E.STOP switch make stop supplying all system power.(except for this PCB)

  If ANL is accepted the command of power stop from DPR (on executing “End process”), start up the suicide circuit and power off the system. In the case of that power is going on supplied with incubation bath (temp. adjustment) and reagent refrigerator and ANL main CPU function block of ANL main CPU.

  If “automatic start up” is set, power ON processing is done according to the signal from ANL main CPU.

- Power Supply

  Normally, 11 VAC is supplied from transformer.

- LED indication

  DS1: Light when the power is supplied with incubation bath (temp. adjustment) and reagent container and ANL-CPU Board

- Installation

  No installation.

■ MV2074 (CPU board)

Outline

This circuit board is a V53CPU circuit board mounted on MV1019 (ANL control circuit board) as a daughter board.

Functions

CPU, memory, I/O

- CPU : V53A, 24 MHz
- SRAM : SRAM (4 Mbit) × 2
  Standard 1 MB (4 MB × 1), 128 KB (256 KB × 4), 2 MB (4 MB × 2) also can be installed.
  However, correspondence to 128 KB is made by jumper.
- ROM : Flash ROM or EPROM × 1
  Standard 64 KB (512 KB × 1), 128 KB (1 MB × 4), 256 KB (2 MB × 2) also can be installed.
  However, correspondence to 128 KB is made by jumper.
- I/O : The data bus is 8 bit for ROM, external memory (dual port RAM), and external I/O (however, I/O on this circuit board is 16 bit), and the SRAM is 16 bit (dynamic bus sizing).

Power supply interruption detection

The CPU circuit board is energized at all times, but a power supply interruption detection circuit is installed for detection of power OFF in case of power failure etc. This circuit can be set and cleared by the program.

The CPU can be reset by expansion circuit board power supply ON, but the power supply detection circuit is not influenced.

Serial communication

The serial channel (only T×D, R×D) in V53A is connected to the bus connector and the debugging connector.

The /DSR terminal is connected to the debugging connector. Shifting to BASIC mode is possible as this becomes ON when the communication cable is connected at the time of debugging.

The baud rate is set with the built-in baud rate generator.

Timer

There are the three timers from #0 to #2, and the #0 clock uses a frequency split from the internal clock. As the slowest setting is 1 μsec. (1/32), setting is possible up to a maximum period of 65.536 msec.

This output is connected to TLC. Accordingly, the two remaining timers can be set to a maximum period of about 4.3 sec when TCLK is selected instead of the internal clock.

Each timer output is connected to an interrupt FF (set by a negative pulse), which generates an interrupt signal.

The interrupt FF set by the timer output can be reset by P20 to 22 respectively of the PPI (output port).

This timer is used for time count when auto start up.

Power supply

+5V power supply

Switch

S1 : 4 bit DIP SW is all off.
S2 : CPU reset

Installation

Nothing special

LED indication

DS1 : Custom IC (EPM7032LC44) PA0 LED
DS2 : Custom IC (EPM7032LC44) PA1 LED
DS3 : Custom IC (EPM7032LC44) PA2 LED
DS4 : Custom IC (EPM7032LC44) PA3 LED
DS5 : CPU RUN

Adjustment

There are no adjustment locations

Connector composition

J1 : 80 pin bus connector (to MV1019)
J2 : +5 V power supply
J3 : For CPU monitoring

■ Required condition for executing system maintenance
- Windows NT
- Install under C:

■ Required condition for executing system program
- Windows NT
- Install under C:
- The structure is following

Directry			Contents
C:\			Windows NT default install
	WINNT\		Windows NT default install
	Program Files\		Windows NT default install
	AU640\		
		Analyzer\	System program system program(ANL)
		DataProcessor\	System program system program(DPR)
		Data\	Data files
		Parameter\	Parameter files
		Message\	Message files
		Help\	Help files
		SystemMaintenance\	System Maintenance
		Dao\	DAO
		Utility\	Utility

■ Inquiry table

Analysis type	Sample type	Analysis mode		
		Sequential	Rack No.	Bar code
Normal analysis	General sample	C-1-1	C-1-2	C-2-1
	Emergency sample	C-1-1	C-1-2	C-2-1
	STAT sample	C-1-3	Same as on the left	C-2-3
Standard rerun	General sample	i-1-1	i-1-1	i-2-1
	Emergency sample	i-1-1	i-1-1	i-2-1
	STAT sample	i-1-2	Same as on the left	i-2-2
	Rerun with STAT table use	i-1-2	Same as on the left	i-2-2
Automatic rerun	General sample	J-1-1	J-1-1	J-2-1
	Emergency sample	J-1-1	J-1-1	J-2-1
	STAT sample			
	Rerun with STAT table use			
Rack	Reagent blank	Same as on the right	K-1-1	Same as on the left
	Calibration	Same as on the right	K-1-1	K-2-1
	QC control sample	Same as on the right	K-1-1	K-2-1
STAT manual	Reagent blank	Same as on the right	L-1-1	Same as on the left
	Calibration	Same as on the right	L-1-1	L-2-1
	QC control sample	Same as on the right	L-1-1	L-2-1
STAT automatic	Reagent blank			
	Calibration			
	QC control sample			

The mixture type (serum, urine, other) is discriminated by comparison of the rack No. information set in the system parameters and the rack No. sent at the time of inquiry from the ANL.

C-1-1 Normal Analysis, Sequential Analysis (general/emergency samples)

1.S. No. Allotment

Inspection acceptance (batch input) :
- The mixture type is judged from the rack No., the start number set by the DPR for each sample type is used as the initial value, and allotment is done by sequential incrementing.
- The S. ID is processed as incidental information.

Real-time online inquiry : Same as on the above

2.S. No. processing when there is no tube

Inspection acceptance (batch input) : General samples: In regard to inquiries from the ANL, count-up is performed by the DPR independent of the presence or absence of a tube, and a no-tube response is made.
Emergency samples: In regard to inquiries from the ANL, count-up is performed only when a tube is present. Count-up by internal flag at the time of no tube can be specified as YES or NO individually for general samples and emergency samples.

Real-time online inquiry : Same as on the above

Inquiry/response processing

3-1-1 Processing 1 for received samplesTube present, allotted S. No. received, analyzed or being analyzed

Inspection acceptance (batch input) : For received and analyzed samples, the item selection information is generated and a tube-present response is made.

Real-time online inquiry : Internal flag selection is possible for the following processing.
1) Inquiry to the host, recording of the item selection information from the host in the work list, and response.
2) No inquiry to the host, same as on the above.

3-1-2 Processing 2 for received samples Tube present Allotted S. No. received or not yet analyzed

Inspection acceptance (batch input) : For received and not yet analyzed samples, the item selection information is generated and a tube-present response is made.

Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.
1) Inquiry to the host, recording of the item selection information from the host in the work list, and response.
2) No inquiry to the host, same as on the above.

3-2 Processing 3 for received samples No-tube, allotted S. No. received

Inspection acceptance (batch input) : No-tube, NOP response with the allotted S. No. An alarm is generated.

Real-time online inquiry : No-tube, NOP response with the allotted S. No. No inquiry to the host.

4-1 Processing of not received samples 1-1 : Tube present, allotted S. No. not yet received

Inspection acceptance (batch input) : *Automatic generation* with the allotted S. No., tube-present response.

Real-time online inquiry : Inquiry to the host, recording of the item selection information from the host in the work list, and response.

4-2 Processing of not received samples 1-2 : No tube, allotted S. No. not yet received

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.
Real-time online inquiry	:	No tube, NOP response with the allotted S. No.

5. Real-time online error processing

Real-time online inquiry	:	*Automatic generation* with the allotted S. No., tube-present response

C-1-2 Normal Analysis, Rack No. Analysis (general, emergency samples)

1. S. No. Allotment

Inspection acceptance (batch input) : • The mixture type is judged from the rack No., and the S. No. is calculated from the rack No. and the tube position.
• The S. ID is processed as incidental information.

Real-time online inquiry : Same as on the above

2. S. No. processing when there is no tube

Inspection acceptance (batch input) : General, emergency samples: In regard to an inquiry from the ANL, the S. No. is calculated and allotted from the rack No. and the tube position, independent of the presence or absence of a tube, and an NOP, no sample information response is made.

Real-time online inquiry : Same as on the above

Inquiry/response processing

3-1-1 Tube present, allotted S. No. received, analyzed or being analyzed

Inspection acceptance (batch input) : For received and analyzed samples, the item selection information is generated and a tube-present response is made.

Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.
1) Inquiry to the host, recording of the item selection information from the host in the work list, and response.
2) No inquiry to the host, same as on the above.

3-1-2 Tube present, allotted S. No. received or not yet analyzed

Inspection acceptance (batch input) : For received and not yet analyzed samples, the item selection information is generated and a tube-present response is made.

Real-time online inquiry : Internal flag selection is possible for the following processing.
1) Inquiry to the host, recording of the item selection information from the host in the work list, and response.
2) No inquiry to the host, same as on the above.

3-2 No tube, allotted S. No. received

Inspection acceptance (batch input) : No-tube, NOP response with the allotted S. No.
An alarm is generated.

Real-time online inquiry : No tube, NOP response with the allotted S. No.
An online inquiry is not made.
An alarm is generated.

4-1 Processing of not received samples 1-1 : Tube present, allotted S. No. not yet received

Inspection acceptance (batch input) : *Automatic generation* with the allotted S. No., tube-present response.

Real-time online inquiry : Inquiry to the host, recording of the item selection information from the host in the work list, and response.

4-2 Processing of not received samples 1-2 : No tube, allotted S. No. not yet received

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.
Real-time online inquiry	:	No tube, NOP response with the allotted S. No.

5. Real-time online error processing

Real-time online inquiry	:	*Automatic generation* with the allotted S. No., tube-present response.

C-1-3 Normal Analysis, STAT Sample

1. S. No. Allotment

Inspection acceptance (batch input) : For samples at a tube-present position, the DPR uses the start No. as the initial value and allots S. numbers with sequential incrementing.
- Correspondence to the mixture types is made by means of the STAT table layout.
- The S. ID is processed as incidental information.

Real-time online inquiry : Same as on the above

2. S. No. processing when there is no tube

Inspection acceptance (batch input) : In regard to no-tube, no inquiries are made from the ANL.
Real-time online inquiry : Same as on the above

Inquiry/response processing

3-1-1 Tube present, allotted S. No. received, analyzed or being analyzed

Inspection acceptance (batch input) : For received and analyzed samples, the item selection information is generated and a tube-present response is made.
Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.
1) Inquiry to the host, recording of the item selection information from the host in the work list, and response.
2) No inquiry to the host, same as on the above.

3-1-2 Tube present, allotted S. No. received or not yet analyzed

Inspection acceptance (batch input) : For received and not yet analyzed samples, the item selection information is generated and a tube-present response is made.
Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.
1) Unconditional inquiry to the host, recording of the item selection information from the host in the work list, and response.
2) No inquiry to the host, same as on the above.

3-2 No tube, allotted S. No. received

Inspection acceptance (batch input) : In regard to no-tube, no inquiries are made from the ANL.
Real-time online inquiry : In regard to no-tube, no inquiries are made from the ANL.

4-1 Processing of not received samples 1-1 : Tube present, allotted S. No. not yet received

Inspection acceptance (batch input) : *Automatic generation* with the allotted S. No., tube-present response.
Real-time online inquiry : Inquiry to the host, recording of the item selection information from the host in the work list, and response.

4-2 Processing of not received samples 1-2 : No tube, allotted S. No. not yet received

Inspection acceptance (batch input) : In regard to no-tube, no inquiries are made from the ANL.
Real-time online inquiry : In regard to no-tube, no inquiries are made from the ANL.

5. Real-time online error processing

Real-time online inquiry : *Automatic generation* with the allotted S. No., tube-present response.

C-2-1 Bar Code Inquiry (general, emergency samples)

1. S. No. Allotment

Inspection acceptance (batch input) : For samples at a tube-present position, the DPR retrieves the sample information by means of the bar code and the mixture type, the retrieved S. No. and the item information are generated, and a response is made.

Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.

1) Inquiry to the host with the larger one of start No. and max. received No., recording of the item selection information from the host, and response.
2) Retrieval of the sample information by means of the bar code and the mixture type, and when there is a corresponding sample, the S. No. and the item selection information are given as response, and when there is no corresponding sample, the item selection information from the host is recorded and a response is made.

2. S. No. processing when there is no tube

Inspection acceptance (batch input) : No count-up, NOP response processing

Real-time online inquiry :
- Same as on the above.
- No inquiry is made to the host.

Inquiry/response processing

3-1-1 S. ID sample separate by mixture type received or not yet analyzed (all items)

Inspection acceptance (batch input) : The sample information is retrieved by means of the bar code and the mixture type, the retrieved S. No. and the item information are generated, and a response is made.
An alarm is generated.

Real-time online inquiry : Internal flag selection is possible for the following processing.

1) Inquiry to the host with the larger one of start No. and max. received No., recording of the item selection information from the host, and response.
2) Retrieval of the sample information by means of the bar code and the mixture type, when there is a corresponding sample, the S. No. and the item selection information are given as response, and when there is no corresponding sample, an inquiry to the host is made with the larger one of start No. and max. received No., the item selection information from the host is recorded and a response is made.

3-1-2 S. ID sample separate by mixture type received, Analyzed (there are not yet analyzed items) or being analyzed

Inspection acceptance (batch input) : Internal flag selection is possible for the following processing.
1) The item selection information is generated for the received and analyzed samples, and it is given as response.
2) When a received and not yet analyzed sample with the same ID is retrieved, the item selection information is generated, and when there is no response, automatic generation is performed with the larger one of start No. and max. received No. + 1.

Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.
1) Inquiry to the host with the larger one of start No. and max. received No., recording of the item selection information from the host, and response.
2) When a received and not yet analyzed sample with the same ID is retrieved, the item selection information is generated and a response is made. If no sample is retrieved, an inquiry to the host is made with the larger one of start No. and max. received No., the item selection information from the host is recorded, and a response is made.

4-1 Processing of not received samples

Inspection acceptance (batch input) : Sequential S. No. allotment from the number set by internal parameter
Automatic generation is made from the larger one of start No. and max. received No., and a tube-present response is made.

Real-time online inquiry : 1) Inquiry to the host with the larger one of start No. and max. received No., recording of the item selection information from the host, and response.

5. Bar code read error processing

Inspection acceptance (batch input) : Automatic generation is made with the larger one of start No. and max. received No., and a tube-present response is made. (The error number is inserted for the S. ID.)

Real-time online inquiry : Internal flag selection is possible for the following processing for each sample type.
1) Automatic generation is made from the larger one of start No. and max. received No., and a tube-present response is made.
2) An online inquiry is made with the S. ID indicating the error. The S. No. is generated automatically from the larger one of start No. and the max. received No. + 1.

6. Real-time online error processing

Real-time online inquiry : 1) Automatic generation is made with the larger one of start No. and max. received No., and a tube-present response is made.

C-2-3 Bar Code Inquiry (STAT samples)

1. S. No. Allotment

Inspection acceptance (batch input) : The DPR retrieves the sample information using the bar code and the mixture type for samples at a tube-present position, the item information is generated, and a response is made.
(The mixture type is decided from the layout on the STAT table, set in advance.)

Real-time online inquiry : Internal flag selection is possible for the following processing.

1) An inquiry is made with the larger one of start No. and max. received No. + 1 for each mixture type decided from the STAT table layout.
2) The sample information is retrieved by means of the bar code and the mixture type, and when there is a corresponding sample, the S. No. and the item selection information are given as response, and when there is no corresponding sample, an inquiry to the host is made with the larger one of start No. and max. received No

2. S. No. processing when there is no tube

Inspection acceptance (batch input) : No count-up is made.
NOP response processing - No inquiry from the ANL

Real-time online inquiry : Same as on the above

Inquiry/response

3-1-1 S. ID sample separate by mixture type received or not yet analyzed (all items)

Inspection acceptance (batch input) : The sample information is retrieved by bar code and mixture type, the item information is generated, and a response is made.
(The mixture type is decided from the layout on the STAT table, set in advance.)

Real-time online inquiry : Internal flag selection is possible for the following processing.

1) An inquiry is made with the larger one of start No. and max. received No. + 1 for each mixture type decided from the STAT table layout.
2) The sample information is retrieved by means of the bar code and the mixture type, and when there is a corresponding sample, the S. No. and the item selection information are given as response, and when there is no corresponding sample, an inquiry to the host is made with the larger one of start No. and max. received No.

3-1-2 S. ID sample separate by mixture type received or analyzed (there are not yet analyzed items)

Inspection acceptance (batch input) : Internal flag selection is possible for the following processing.
1) Item selection information is generated for the received and analyzed samples, and a response is made.
2) When a received and not yet analyzed sample with the same ID is retrieved, the item selection information is generated and a response is made. If no sample is retrieved, automatic generation is made from the larger one of start No. and max. received No. for each mixture type decided from the STAT table layout, and a tube-present response is made.

Real-time online inquiry : Internal flag selection is possible for the following processing.
1) The item selection information is generated for the received and analyzed samples, and a response is made to the ANL.
2) When a received and not yet analyzed sample with the same ID is retrieved, the item selection information is generated, and a response is made, and when no sample is retrieved, an inquiry is made with the larger one of start No. and max. received No. + 1.

4. Not received sample processing

Inspection acceptance (batch input) : Automatic generation is made from the larger one of start No. and max. received No. for each mixture type decided from the STAT table layout, and a tube-present response is made.

Real-time online inquiry : An inquiry is made with the larger one of start No. and max. received No. + 1 for each mixture type decided from the STAT table layout.

5. Bar code read error processing

Inspection acceptance (batch input) : Automatic generation is made with the larger one of start No. and max. received No., and a tube-present response is made. (The error number is inserted for the S. ID.)

Real-time online inquiry : Internal flag selection is possible for the following processing.
1) Automatic generation is made from the larger one of start No. and max. received No., and a tube-present response is made.
2) An online inquiry is made with the S. ID indicating the error. The S. No. is generated automatically from the larger one of start No. and the max. received No. + 1.

6. Real-time online error processing

Real-time online inquiry : Automatic generation is made with the larger one of start No. and max. received No., and a tube-present response is made.

i-1-1 Rerun Analysis, Sequential Analysis (general/emergency samples)

1. S. No. Allotment

Inspection acceptance (batch input)	:	The mixture type is judged from the rack No., and the start No. for the respective rerun S. No. is used as the initial value, which is incremented sequentially.
Real-time online inquiry	:	Same as on the above

2. S. No. processing when there is no tube

Inspection acceptance (batch input)	:	No count-up
Real-time online inquiry	:	Same as on the above

Inquiry/response processing

3-1-1 Tube present, allotted rerun No. received or analyzed

Inspection acceptance (batch input)	:	For received and analyzed samples, the item selection information is generated and a tube-present response is made.
Real-time online inquiry	:	Internal flag selection is possible for the following processing. 1) Inquiry to the host, recording of the item selection information from the host in the work list, and response. 2) No inquiry to the host, same as on the above.

3-1-2 Tube present, allotted S. No. received or not yet analyzed

Inspection acceptance (batch input)	:	For received and not yet analyzed samples, the item selection information is generated and a tube-present response is made.
Real-time online inquiry	:	Internal flag selection is possible for the following processing. 1) Inquiry to the host, recording of the item selection information from the host in the work list, and response. 2) No inquiry to the host, same as on the above.

3-2 Same S. No. processing 2 No tube, allotted rerun No. received

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No. Alarm generation
Real-time online inquiry	:	No tube, NOP response with the allotted S. No. No inquiry to the host Alarm generation

4-1 Not received sample processing 1-1 : Tube present, allotted rerun No. not received

Inspection acceptance (batch input)	:	Mode transition processing (M1 ⇒ M2) Tube-present, NOP response
Real-time online inquiry	:	Inquiry to the host, recording of the item selection information from the host in the work list, and response.

4-2 Processing of not received samples 1-2 : No tube, allotted S. No. not yet received

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.
Real-time online inquiry	:	No tube, NOP response with the allotted S. No.

5. Real-time online error processing

Real-time online inquiry	:	NOP response to ANL

i-2-1 Bar Code Inquiry (general. emergency samples), Standard Rerun

1. S. No. Allotment

Inspection acceptance (batch input)	:	For samples at a tube-present position, the DPR retrieves the sample information by means of the bar code and the mixture type, the retrieved S. No. and the item information are generated, and a response is made.
Real-time online inquiry	:	Internal flag selection is possible for the following processing. 1) Inquiry to the host with the larger one of start No. and max. received No. + 1 2) Retrieval of the sample information by bar code and mixture type, when there is a corresponding sample, response with the retrieved S. No. and item selection information, and when there is no corresponding sample, inquiry with the start No. and the max. received No. + 1.

2. S. No. processing when there is no tube

Inspection acceptance (batch input)	:	No count-up, NOP response processing
Real-time online inquiry	:	• Same as on the above • No inquiry to the host

Inquiry/response processing

3-1-1 S. ID sample separate by mixture type received or not yet analyzed (all items)

Inspection acceptance (batch input)	:	Retrieval of the sample information by bar code and mixture type, generation of retrieved S. No. and item information, and response.
Real-time online inquiry	:	Retrieval of the sample information by bar code and mixture type, and when there is a corresponding sample, response with the retrieved S. No. and item selection information. (No inquiry to the host)

3-1-2 (Same S. ID processing)Mixture type, S. ID sample received, Analyzed (there are not yet analyzed items) or being analyzed

Inspection acceptance (batch input)	:	Generation of the item selection information for the received and analyzed samples and response.
Real-time online inquiry	:	Generation of the item selection information for the received and analyzed samples and response.

4-1 Processing of not received samples

Inspection acceptance (batch input)	:	Tube present, NOP response
Real-time online inquiry	:	Inquiry to the host with the larger one of start No. and max. received No. + 1. When the response from the host is NOP, no count-up is made for the rerun S. No.

5. Bar code read error processing

Inspection acceptance (batch input)	:	NOP response
Real-time online inquiry	:	NOP response

6. Real-time online error processing

Real-time online inquiry	:	NOP response

i-1-2 Rerun Analysis, Sequential Analysis (STAT samples)

1. S. No. Allotment

Inspection acceptance (batch input)	:	The mixture type is judged from the STAT table position, the start No. for the respective rerun S. No. is used as the initial value, and this value is incremented sequentially.
Real-time online inquiry	:	Same as on the above

2. S. No. processing when there is no tube

Inspection acceptance (batch input)	:	No inquiry
Real-time online inquiry	:	Same as on the above

Inquiry/response processing

3-1-1 Tube present, allotted rerun No. received, analyzed or being analyzed

Inspection acceptance (batch input)	:	For received and analyzed samples, the item selection information is generated and a tube-present response is made.
Real-time online inquiry	:	Same as on the above, no inquiry to the host.

3-1-2 Tube present, allotted S. No. received or not yet analyzed

Inspection acceptance (batch input)	:	For received and not yet analyzed samples, the item selection information is generated and a tube-present response is made.
Real-time online inquiry	:	Same as on the above, no inquiry to the host.

3-2 No tube, allotted rerun No. received No inquiry

Inspection acceptance (batch input)	:	No inquiry
Real-time online inquiry	:	Same as on the above

4-1 Not received sample processing 1-1 : Tube present, allotted rerun No. not received

Inspection acceptance (batch input)	:	Tube present, NOP response
Real-time online inquiry	:	Inquiry to the host, recording of the item selection information from the host in the work list, and response.

4-2 Processing of not received samples 1-2 : No tube, allotted S. No. not yet received

Inspection acceptance (batch input)	:	No inquiry
Real-time online inquiry	:	Same as on the above

5. Real-time online error processing

Real-time online inquiry	:	NOP response to ANL

i-2-2 Bar Code Inquiry (STAT samples), Standard Rerun

1. S. No. Allotment

Inspection acceptance (batch input)	:	For samples at a tube-present position, the DPR retrieves the sample information by means of the bar code and the mixture type, the retrieved S. No. and the item information are generated, and a response is made.
Real-time online inquiry	:	Internal flag selection is possible for the following processing. 1) Inquiry to the host with the larger one of start No. and max. received No. + 1 2) Retrieval of the sample information by bar code and mixture type, when there is a corresponding sample, response with the retrieved S. No. and item selection information, and when there is no corresponding sample, inquiry with the start No. and the max. received No. + 1.

2. S. No. processing when there is no tube

Inspection acceptance (batch input)	:	No inquiry
Real-time online inquiry	:	• Same as on the above • No inquiry to the host

Inquiry/response processing

3-1-1 S. ID sample separate by mixture type received or not yet analyzed (all items)

Inspection acceptance (batch input)	:	For samples at a tube-present position, the DPR retrieves the sample information by means of the bar code and the mixture type, the retrieved S. No. and the item information are generated, and a response is made.
Real-time online inquiry	:	Retrieval of the sample information by bar code and mixture type, and when there is a corresponding sample, response with the retrieved S. No. and item selection information. (No inquiry to the host)

3-1-2 (Same S. ID processing)Mixture type, S. ID sample received, analyzed (there are not yet analyzed items) or Being analyzed

Inspection acceptance (batch input)	:	Generation of the item selection information for the received and analyzed samples and response.
Real-time online inquiry	:	Generation of the item selection information for the received and analyzed samples and response.

4-1 Processing of not received samples

Inspection acceptance (batch input)	:	Tube present, NOP response
Real-time online inquiry	:	Inquiry to the host with the larger one of start No. and max. received No. + 1. When the response from the host is NOP, no count-up is made for the rerun S. No.

5. Bar code read error processing

Inspection acceptance (batch input)	:	NOP response
Real-time online inquiry	:	NOP response

6. Real-time online error processing

Real-time online inquiry	:	NOP response

J-1-1 Automatic Rerun, Sequential Analysis (general/emergency samples)

1. S. No. Allotment

Inspection acceptance (batch input)	:	Sample retrieval by DPR identification key, allotment of the retrieved sample number as sample number.
Real-time online inquiry	:	None Sequential incrementing with the sample number as start number, retrieval of the original sample number by DPR identification key, and inquiry to the host.

2. S. No. processing when there is no tube

Inspection acceptance (batch input)	:	NOP response
Real-time online inquiry	:	Same as on the above

Inquiry/response processing

3-1-1 Registered in the rerun work list, during rerun analysis or rerun analysis completed

Inspection acceptance (batch input)	:	NOP response with the retrieved number as rerun S. No.
Real-time online inquiry	:	No inquiry to the host, same processing as on the above.

3-1-2 Registered in the rerun work list or rerun analysis not yet done

Inspection acceptance (batch input)	:	Generation of the item information for the received, not yet analyzed samples and response to the ANL.
Real-time online inquiry	:	No inquiry to the host, same processing as on the above.

3-2 Not registered in the rerun work list or registered in the rerun work list

Inspection acceptance (batch input)	:	NOP response
Real-time online inquiry	:	Same as on the above The sample number becomes the recorded number + 1, the original sample number is retrieved by DPR identification key, and an inquiry is made to the host.

3-3 During rerun analysis or rerun analysis completed

Inspection acceptance (batch input)	:	Generation of the item information for the received, not yet analyzed samples and response to the ANL.
Real-time online inquiry	:	No inquiry to the host, same processing as on the above.

4. Real-time online error processing

Real-time online inquiry	:	NOP response to ANL

J-2-1 Automatic Rerun, Bar Code Analysis (general/emergency samples)

1. S. No. Allotment

Inspection acceptance (batch input)	:	Sample retrieval by DPR identification key, allotment of the retrieved sample number as sample number. Alarm output when the retrieved S. ID differs from the inquiry S. ID.
Real-time online inquiry	:	None Sequential incrementing with the sample number as start number, retrieval of the original sample number and the S. ID by DPR identification key, and inquiry to the host.

2. S. No. processing when there is no tube

Inspection acceptance (batch input)	:	OP response
Real-time online inquiry	:	Same as on the above

Inquiry/response processing

3-1-1 Registered in the rerun work list, during rerun analysis, rerun analysis completed or rerun analysis not yet completed

Inspection acceptance (batch input)	:	NOP response with the retrieved number as rerun S. No. Generation of the item information for the registered, not yet analyzed samples and response to the ANL.
Real-time online inquiry	:	No inquiry to the host, same processing as on the above. No inquiry to the host, same processing as on the above.

3-2 Not registered in the rerun work list or no rerun analysis data

Inspection acceptance (batch input)	:	OP response
Real-time online inquiry	:	Same as on the above The sample number becomes the recorded number + 1, the original sample number is retrieved by DPR identification key, and an inquiry is made to the host.

3-3 Registered in the rerun work list, during rerun analysis or rerun analysis completed

Inspection acceptance (batch input)	:	Generation of the item information for the received, not yet analyzed samples and response to the ANL.
Real-time online inquiry	:	No inquiry to the host, same processing as on the above.

4. Real-time online error processing

Real-time online inquiry	:	NOP response to ANL

K-1-1 Reagent Blank, Calibration, QC Control Samples

1. S. No. Allotment

Inspection acceptance (batch input) : In principle, the number is incremented sequentially at the time of data output. Provisionally, allotting is done with incrementing each time a reagent consumption inquiry message comes.

2. Processing when there is no tube

Inspection acceptance (batch input) : NOP response

Inquiry/response processing

3-1 When there is a tube and the sample corresponding to the allotted tube position has been received(Independent of analysis or no analysis)

Inspection acceptance (batch input) : Generation of the item selection information from the received sample and tube-present response.
(The kind No. is calculated from the rack No. and the tube position, and the item information is specified.)

3-2 When there is no tube and the sample corresponding to the allotted tube position has been received(Independent of analysis or no analysis)

Inspection acceptance (batch input) : No tube at the allotted S. No., NOP response.
An alarm is generated.
(The kind No. is calculated from the rack No. and the tube position, and the item information is specified.)

4-1 Not received sample processing 1-1：Tube present, the sample corresponding to the tube position not received

Inspection acceptance (batch input) : One of the following responses is made with the allotted S. No. Selection is made by internal flag. Tube present, NOP response.
(The kind No. is calculated from the rack No. and the tube position, and the item information is specified.)

4-2 Processing of not received samples 1-2：No tube, allotted S. No. not yet received

Inspection acceptance (batch input) : No tube, NOP response with the allotted S. No.

K-2-1 Calibration, QC Control Samples (bar code analysis)

1. S. No. Allotment

Inspection acceptance (batch input)	:	In principle, the number is incremented sequentially at the time of data output. Provisionally, allotting is done with incrementing each time a reagent consumption inquiry message comes.

2. Processing when there is no tube

Inspection acceptance (batch input)	:	NOP response

Inquiry/response processing

3-1 Generation of the item selection information from the received sample and tube-present response.(The kind No. is calculated from the S. ID, and the item information is specified.)

Inspection acceptance (batch input)	:	Generation of the item selection information from the received sample and tube-present response.(The kind No. is calculated from the S. ID, and the item information is specified.)

3-2 When there is no tube and the sample corresponding to the allotted tube position has been received(Independent of analysis or no analysis)

Inspection acceptance (batch input)	:	No tube with the allotted S. No., NOP response. An alarm is generated. (The kind No. is calculated from the S. ID, and the item information is specified.)

4-1 Not received sample processing 1-1：Tube present, the sample corresponding to the tube position not received

Inspection acceptance (batch input)	:	One of the following responses is made for the allotted S. No. Selection is made by internal flag. Tube present, NOP response. (The kind No. is calculated from the S. ID, and the item information is specified.)

4-2 Processing of not received samples 1-2：No tube, allotted S. No. not yet received

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.

5. Bar code read error

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.

L-1-1 Reagent Blank, Calibration, QC Control Samples

1. S. No. Allotment

Inspection acceptance (batch input) : In principle, the number is incremented sequentially at the time of data output. Provisionally, allotting is done with incrementing each time a reagent consumption inquiry message comes.

2. Processing when there is no tube

Inspection acceptance (batch input) : NOP response

Inquiry/response processing

3-1 Generation of the item selection information from the received sample and tube-present response.(The kind No. is calculated from the S. ID, and the item information is specified.)

Inspection acceptance (batch input) : Generation of the item selection information from the received sample and tube-present response. (The kind No. is calculated from the tube position, and the item information is specified.)

3-2 When there is no tube and the sample corresponding to the allotted tube position has been received(Independent of analysis or no analysis)

Inspection acceptance (batch input) : No tube with the allotted S. No., NOP response.
An alarm is generated.
(The kind No. is calculated from the tube position, and the item information is specified.)

4-1 Not received sample processing 1-1 : Tube present, the sample corresponding to the tube position not received

Inspection acceptance (batch input) : One of the following responses is made for the allotted S. No.
Selection is made by internal flag.
Tube present, NOP response.
(The kind No. is calculated from the tube position, and the item information is specified.)

4-2 Processing of not received samples 1-2 : No tube, allotted S. No. not yet received

Inspection acceptance (batch input) : No tube, NOP response with the allotted S. No.

K-2-1 Calibration, QC Control Samples (bar code analysis)

1. S. No. Allotment

Inspection acceptance (batch input)	:	In principle, the number is incremented sequentially at the time of data output. Provisionally, allotting is done with incrementing each time a reagent consumption inquiry message comes.

2. Processing when there is no tube

Inspection acceptance (batch input)	:	NOP response

Inquiry/response processing

3-1 Generation of the item selection information from the received sample and tube-present response.(The kind No. is calculated from the S. ID, and the item information is specified.)

Inspection acceptance (batch input)	:	Generation of the item selection information from the received sample and tube-present response. (The kind No. is calculated from the tube position, and the item information is specified.)

3-2 When there is no tube and the sample corresponding to the allotted tube position has been received(Independent of analysis or no analysis)

Inspection acceptance (batch input)	:	No tube with the allotted S. No., NOP response. An alarm is generated. (The kind No. is calculated from the S. ID, and the item information is specified.)

4-1 Not received sample processing 1-1：Tube present, the sample corresponding to the tube position not received

Inspection acceptance (batch input)	:	One of the following responses is made for the allotted S. No. Selection is made by internal flag. Tube present, NOP response. (The kind No. is calculated from the S. ID, and the item information is specified.)

4-2 Processing of not received samples 1-2：No tube, allotted S. No. not yet received

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.

5. Bar code read error

Inspection acceptance (batch input)	:	No tube, NOP response with the allotted S. No.

■ Test dilution

Test dilution analysis method

The following is performed when the test diluent of the test dilution sample is dispensed.

- After 5 cycles, probe washing is performed as dummy.
- After 6 cycles, the reagent for the test dilution item is dispensed.
- The reagent for the test dilution item is dispensed even with shifting to PAUSE.
- The sample is not changed until dispensing of the reagent for the test dilution item.
- During RB/ACAL multi-measuring, a dummy shall be used until dispensing of the reagent for the test dilution item.
- In case of the same sample, analysis of the general items is performed within 2 to 4 cycles.
- In case of the same sample, dilution item analysis (diluent dispensing) is performed at the second or the fourth cycle.

Processing speed at the time of test dilution

The processing speeds for analysis of multiple samples with the same item selection are shown in the following.

Number of normal items Number of test dilution items	0	1	2	3	4	5	6	7	8
0		800	800	800	800	800	800	800	800
		800	400	266	200	160	133	114	100
1	114	229	343	457	571	600	622	640	654
	114	114	114	114	114	100	89	80	73
2	178	267	355	444	480	509	533	553	571
	89	89	89	89	80	73	67	62	57
3	218	291	364	400	431	457	480	500	517
	73	73	73	67	62	57	53	50	47
4	178	222	266	311	326	400	444	463	480
	44	44	44	44	44	44	44	42	40
5	200	240	280	320	360	400	419	436	452
	40	40	40	40	40	40	38	36	35
6	218	254	291	327	364	382	400	416	431
	36	36	36	36	36	35	33	32	31
7	193	220	248	276	303	331	358	386	413
	27	27	27	27	27	27	27	27	27
8	206	232	258	284	310	335	361	387	400
	26	26	26	26	26	26	26	26	25

67 samples/h processed from test dilution item 2 to general item 6.

Upper line: Number of items/h
Lower line: Number of samples/h

(Case1) 1 x Predilution item + 5 x Normal items

Necessary steps is 8 for 6 items. (Throughput = 600 = 800 x 6/8)

Step	Meas	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	P1	D	M1	-	-	-	-	S/R 1	-/M1	-/-	M2/-	-/-	A/-	-/DS							
2	N1		R1	M1	-	-	-	-	S												
3	N2			R1	M1	-	-	-	-	S											
4	N3				R1	M1	-	-	-	-	S										
5	N4					R1	M1	-	-	-	-	S									
6	X						X														
7	X							X													
8	N5								R1	M1	-	-	-	-	S						
9	(Next sample)																				
10																					
11																					
12																					
13																					
14																					
15																					
16																					
17																					
18																					
19																					
20																					
21																					

(Condition)

Sample probe can be used for only 1 function in 1 cycle.

Sample is not shifted to the next sample until all R1 are dispensed for all test on the sample.

Step: Number of cycle

Meas: P: Predilution, N: Normal measure, X: No measure on the step

D: Dilution dispense

M1: Mix 1

R1: Reagent 1 dispense

S: Sample dispense

M2: Mix 2

A: Aspiration of diluted sample

DS: Diluted sample dispense

'-': No action

S or A or DS: Sample probe is used.

(e.g.) S/R1 : Sample dispense is done for dilution cuvette,/ R1 is done for Target cuvette.

(Case1) 5 x Predilution item + 0 x Normal items
Necessary steps is 20 for 5 items. (Throughput = 200 = 800 x 5/20)

Step	Meas	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	P1	D	M1	-	-	-	-	S/R 1	-/M1	-/-	M2/-	-/-	A/-	-/DS							
2	X		X																		
3	P2			D	M1	-	-	-	-	S/R 1	-/M1	-/-	M2/-	-/-	A/-	-/DS					
4	X				X																
5	P3					D	M1	-	-	-	-	S/R 1	-/M1	-/-	M2/-	-/-	A/-	-/DS			
6	X						X														
7	X							X													
8	X								X												
9	X									X											
10	X										X										
11	X											X									
12	P4												D	M1	-	-	-	-	S/R 1	-/M1	-/-
13	X													X							
14	P5														D	M1	-	-	-	-	S/R 1
15	X															X					
16	X																X				
17	X																	X			
18	X																		X		
19	X																			X	
20	X																				X
21	(Next sample)																				

(Condition)
Sample probe can be used for only 1 function in 1 cycle.
Sample is not shifted to the next sample until all R1 are dispensed for all test on the sample.

Step: Number of cycle
Meas: P: Predilution, N: Normal measure, X: No measure on the step
D: Dilution dispense
M1: Mix 1
R1: Reagent 1 dispense
S: Sample dispense
M2: Mix 2
A: Aspiration of diluted sample
DS: Diluted sample dispense
'-': No action
S or A or DS: Sample probe is used.
(e.g.) S/R1 : Sample dispense is done for dilution cuvette,/ R1 is done for Target cuvette.

■ Contamination

Contamination types

Contamination between mixtures, R1 ⇒ R1 contamination setting is possible.

Priority rank for item decision

Checking is done in the following order.

(1) In case of dispensing of reagent corresponding to the present cycle for which test diluent has been dispensed
(2) Dummy from dispensing of test diluent
(3) Sample contamination prevention by urine ⇒ serum (others)
(4) ISE items
(5) Test dilution items (test diluent)

When contamination conditions have been set, items which can be analyzed are aligned in the order of increasing number of contamination washings, these are checked in the order of increasing number of items, and the items shall be free of contamination.

Retaining of contamination information

The contamination status remains memorized after POWER ON.

Cancellation of contamination conditions

A. Mixture contamination

Cancellation of contamination shall exist in case of analysis of not contaminating items or dummy.

B. Reagent

Contamination shall be considered as cancelled with dispensing of the specified detergent for the specified number of times or in case of analysis of not contaminating items or dummy/detergent for five times or more.

Contamination check

A. MIX

When the item analyzed two cycles earlier was an item preceding contamination and the item with this cycle is an item following contamination, this is judged as contamination and another item is analyzed.

When further the item four cycles earlier was test diluent and the item of the present cycle is an item preceding contamination, while the item four cycles earlier is an item following contamination, this is judged as contamination.

B. Reagent

a) When the detergent dispensing number for contamination prevention is one

When the item analyzed in the previous cycle was an item preceding contamination and the item of this cycle is an item following contamination, it is judged that contamination exists and another item is analyzed.

When there is no other item, the specified detergent is dispensed.

When further the item five cycles earlier was test diluent, the item of this cycle is an item preceding contamination, and the item five cycles earlier was an item following contamination, it is judged that contamination exists.

b) When the detergent dispensing number for contamination prevention is N

When the items analyzed during the cycles 1 to N were items preceding contamination and the item of the present cycle is an item following contamination, it is judged that contamination exists and another item is analyzed.

When there is no other item, the specified detergent is dispensed.

When further the items N to five cycles earlier were test diluents, the item of the present cycle is an item preceding contamination, and the items N to 5 cycles earlier are items following contamination, it is judged that contamination exists.

Notes:1) Test diluent is a contamination object in the same way as normal items.

Notes:2) When there is no specified detergent, dummy operation is performed.

Notes:3) In case of a liquid level error or no residual volume for the detergent for R2, the residual quantity for R1 also shall be made zero.

1. Basis of analysis data calculation

1) Data type transmitted from ANL

(1) Photometry data

OD * (binary data of 10000)

(2) ISE data

PACK BCD binary point is fixed by each item

2) Data type handled by data processing

Single precision REAL type data.

If there is a problem, the data is handled as double precision REAL type data.

3) Basis of data operation

(1) Range check

Range check is performed against printed or displayed data

CRT displayed data

Print out data

On-line output data

Output data to floppy disk

(2) Displayed and output is output after rounding off

Dynamic range check

Panic range check

Normal value range check

QC range check, QC stack processing, QC multi rule check

(3) Cross-items calculation and cross-items check is performed using operated items data and print out data.

(4) Others

Internal operation is performed with REAL type data except in special cases.

4) Multiplex data processing (Averaged processing)

(1) Abstract

With one analysis item, the same analysis is performed to determine the representation value of output data.

(2) Object sample type

Reagent blank, Calibration sample

(3) Processing contents, condition

The value is calculated using data analyzed multiple times for assigned according to items cuvette numbers and items.

Cuvette Qty.	Processing contents
1	Available data becomes representation value.
2	The average value for two pieces of available data becomes the representation value. If there is only one piece of data, there is no representation value.
3	With 3 values, the average value of two pieces of data with the smaller difference becomes the representation value. If two pieces of data are available, it is in accordance with the cuvette number 2.
4	With 4 values the average value of two data except max and min becomes the representation value. If three pieces of data are available, it is in accordance with the cuvette number 3. If two pieces of data are available, it is in accordance with the cuvette number 2. If only one piece of data at most is available, there is no value.

Note) Available data isn't attached with an abnormal mark, and data exists.

2. Processing flow

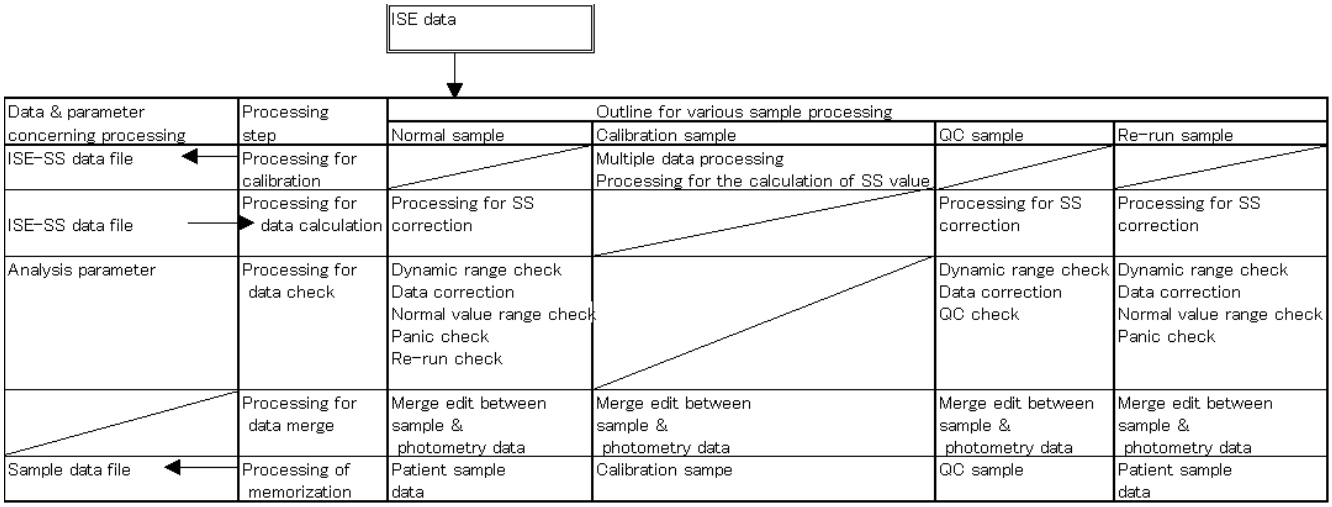
Processing outline

Photometry data processing

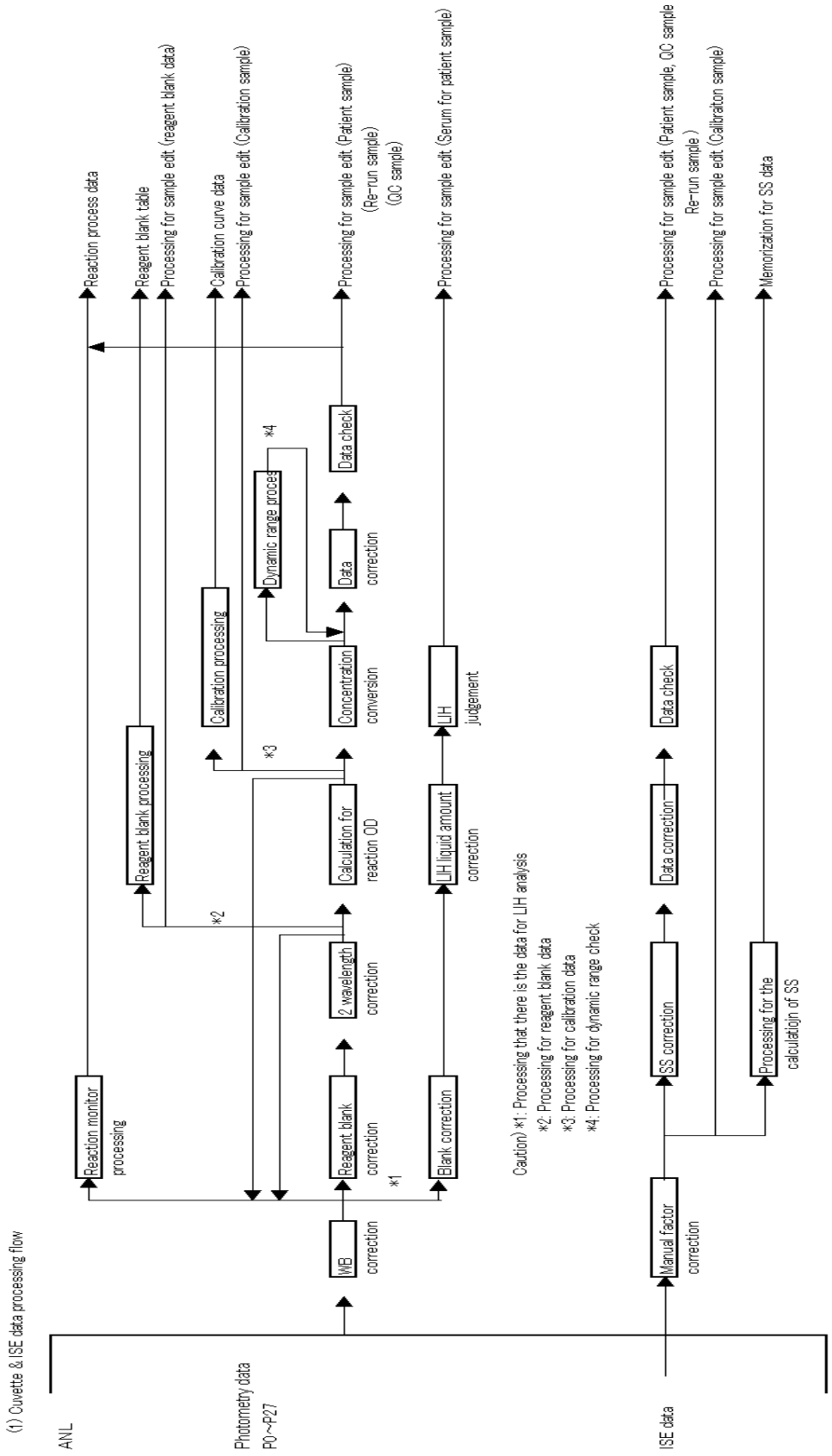
OD value at each photometry point

Data & parameter concerning processing	Proceeding step	Outline for various sample processing				
		Normal sample	Reagent blank sample	Calibration sample	QC sample	Re-run sample
Photocal data (Water blank data in each cuvette)	(1)WB data correction	WB data correction	WB data processing Multiple data process Calculation for reagent blank table →Reagent blank Generation of table file	WB data correction	WB data correction	WB data correction
Analysis parameter (Measured wavelength)	(2)2 wavelength correction	2 wavelength correction Reaaction data process Reaction data processing				
Reagent blank table data	(3)Reagent blank correction	Reagent blank correction (LIH data calculation)		Reagent blank correction	Reagent blank correction	Reagent blank correction
Analysis parameter (Condition in each item) (Calibration condition)	(4)Calculation for the value of reaction OD	Liquid amount correction Rate & end calculation OD level data check Calculation of sample blank	Liquid amount correction	Liquid amount correction Rate & End calculation OD level data check Sample blank calculation Multiple data processing Calculation of calibration →Calibration data file	Liquid amount correction Rate & End calculation OD level data check Sample blank calculation	Liquid amount correction Rate & End calculation OD level data check Sample blank calculation
Calibration curve data (Value for calibration factor or calibration condition Analysis parameter (Condition in each item) (QC condition) (Re-run parameter condition) (Operation between items & Check condition between items)	(5)Calculation for the concentration	Concentration conversion Ddynamic range check Data correction Normal value range check Panic check Re-run check Operation between items Check between items →Reaction data file			Conc. conversion Dynamic range check Data correction QC check →Reaction data file	Conc. conversion Dynamic range check Data correction Normal value range check Panic check Re-run check Operation between items Check between items →Reaction data file
Processing for sample edit						
Various data file	(1)Quick response data edit (STAT sample only)	Quick response data edit Operation process between items Check process between items				Quick response data process Operation process between items Check process between items
	(2)Sample data edit	One sample edit Operation process between items Check process between items Re-run extraction	One sample edit	One sample edit	One sample edit	One sample edit Operation process between items Check process between items
	(3)Data memorization	Patient sample data file	Reagent blank sample Data file	Calibration sample Data file	QC sample data file	Patient sample data file

ISE data processing



(1) Processing flow

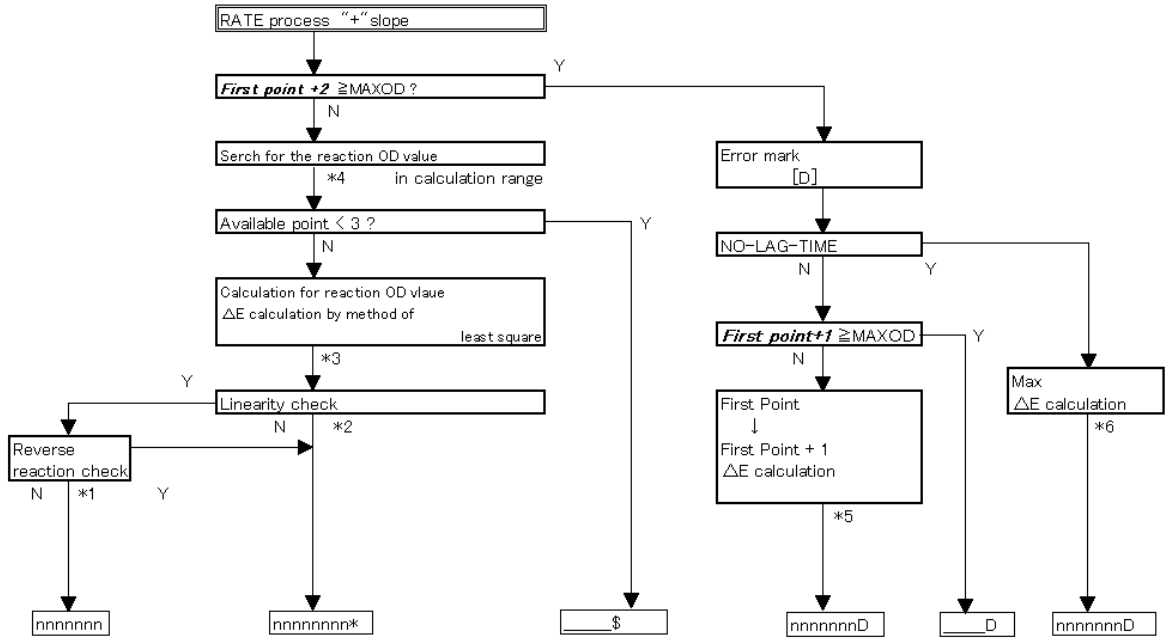


3. Processing for calculating the value for reaction OD

1) RATE processing

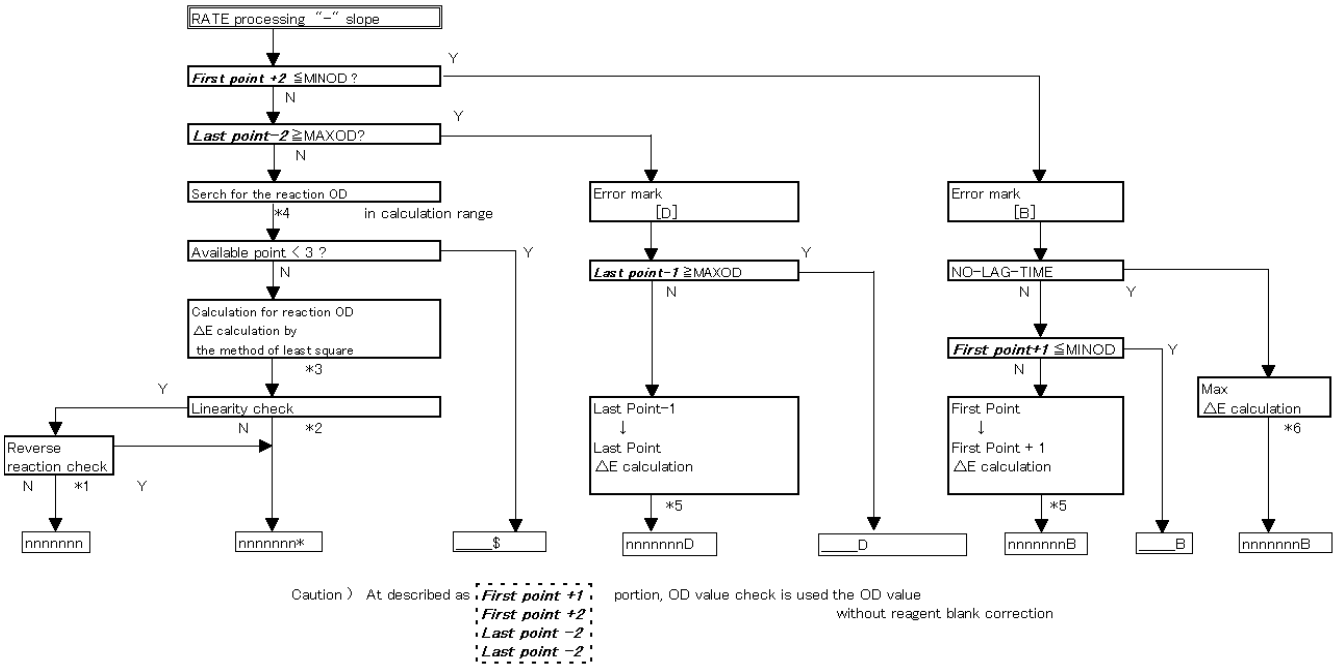
(1) Processing flow

Processing flow for "+ " slope

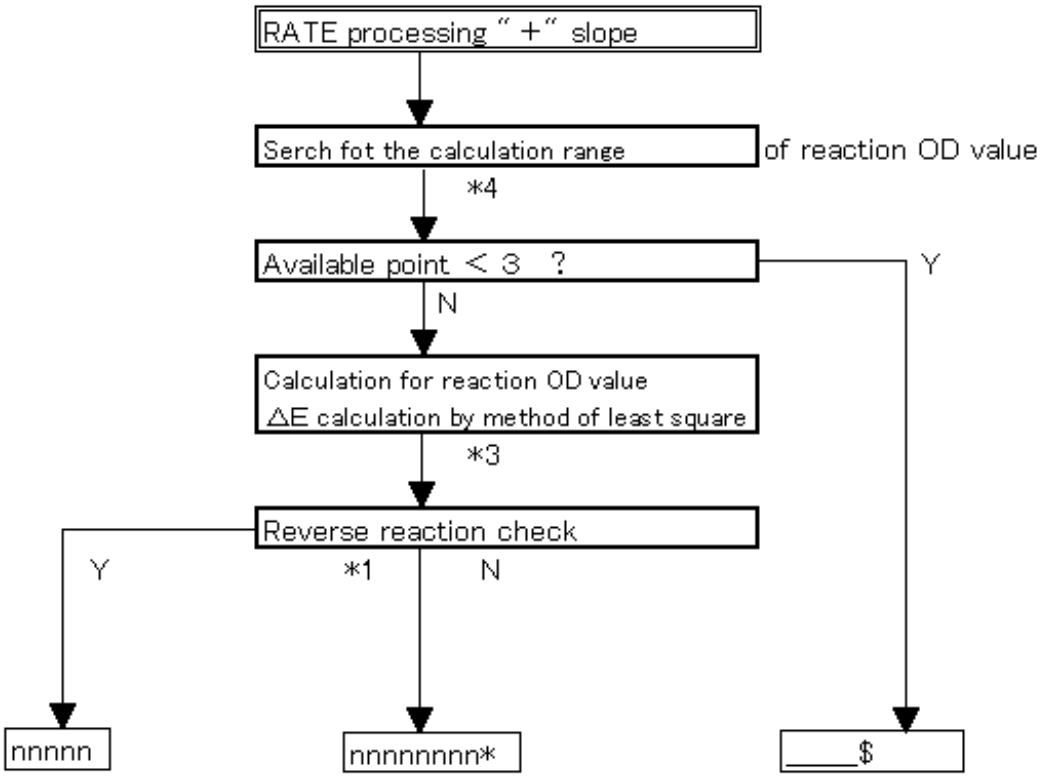


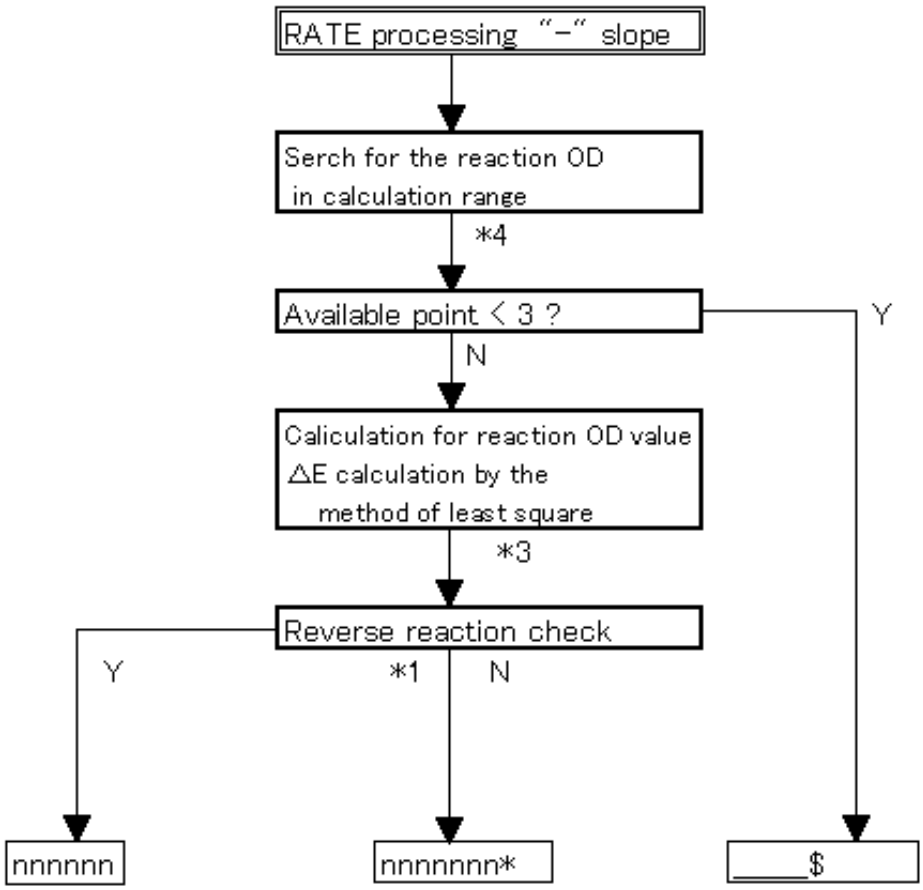
Caution) At described as *First point +1*, *First point +2*, *Last point −2*, *Last point −2* portion, OD value check is used the OD value without reagent blank correction

Processing flow for " - " slope



Caution) At described as ***First point +1***, ***First point +2***, ***Last point −2***, ***Last point −2*** portion, OD value check is used the OD value without reagent blank correction





*1 Reverse reaction check

Check is performed on the available photometry point as follows. For abnormal data, " ✶ " is attached.

Slope	Judgment formula
+	$(P_n - P_{n+1}) / 2 > d$
-	$(P_{n+1} - P_n) / 2 > d$

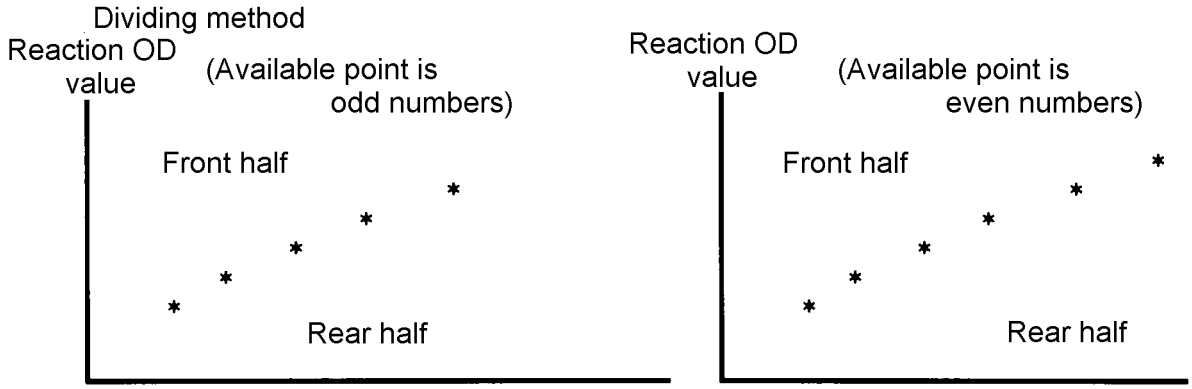
" n " and " n+1 " is the available photometry point.

" d " is the capable reverse OD value from the 9 second-unit.

" d " is included in the maker fixed parameter as an inside value.

*2 Lineality check

Available points are divided in the front half and rear half and ΔE is calculated (for each).
If the following judgment formula isn't satisfied, the error mark " * "is appended as linearity check error.



Judgment formula

$$\left| \frac{\Delta E1 - \Delta E2}{\frac{\Delta E1 + \Delta E2}{2}} \right| \times 100 < \text{linearity limitation}$$

(Set by parameter menu)

or

$$|\Delta E1 - \Delta E2| < C$$

C: Set by parameter menu

*3. Calculation for reaction OD value using method of smallest squares

The OD value is calculated using the following formula and using the available photometry point. ((ΔEx (which is calculated when the linearity check has been performed.) is the same.))

$$\frac{\Sigma ODI \times ti - (\Sigma ti \times \Sigma ODI) / n}{\Sigma (tI \times ti) - (\Sigma ti \times \Sigma ti) / n}$$

The calculated value is the reaction OD value for 9 seconds. The value for one minute is calculated in multiples of 60/9.

Relationship between available photometry point and ti

Photometry point	ti	ODI
P1	0	OD1
P2	2	OD2
P3	4	OD3
P4	6	OD4
P5	8	OD5
P6	10	OD6
P7	12	OD7
P8	14	OD8
P9	16	OD9
P10	18	OD10
P11	21	OD11
P12	23	OD12
P13	25	OD13
P14	27	OD14

Photometry point	ti	ODI
P15	29	OD15
P16	31	OD16
P17	33	OD17
P18	35	OD18
P19	37	OD19
P20	39	OD20
P21	41	OD21
P22	43	OD22
P23	45	OD23
P24	47	OD24
P25	49	OD25
P26	51	OD26
P27	53	OD27

*4 Search of calculation range of the value of reaction OD

• If the reaction slope is "-"

First point If the point counts up from the point set by the parameter menu, the first point below MAX OD that doesn't have a "@" mark (in the column of the OD value in each wavelength) is set as the photometry point.

* "@" indicates the value of OD is over 2.5.

Last point If the point counts down from the point set by the parameter menu, the photometry point before the 1st Min OD is set as the photometry point.

• If the reaction slope is "+"

First point If the point counts up from the point set by the parameter menu, the first point after Min OD is set as the photometry point.

Last point If the point counts down from the point set by the parameter menu, the first point below MAX OD and that doesn't have a "@" mark (in the column of the OD value in each wavelength) is set as photometry point.

* "@" indicates the value of OD is over 2.5.

<Search of calculation range of the value of reaction OD>

• If the reaction slope is "-"

First point If the point counts up from the point set by the parameter menu, the point that does not have a "@" mark (in the column of the OD value in each wavelength) is set as the photometry point.

* "@" indicates the value of OD is over 2.5.

Last point If the point counts down from the point set by the parameter menu, and is set as the photometry point.

• If the reaction slope is "-"

First point The point set by the parameter menu is set as the first photometry point.

Last point If the point counts down from the point set by the parameter menu, the point that doesn't have a "@" mark (in the column of the OD value in each wavelength) is set as the photometry point.

*5 Calculation for delta ΔE of D and B marks

(1) First point to first point +1

Reaction slope	Reaction OD value	Value for one minute
+	ΔE = OD (First point +1) - OD (First point)	* 60 / 18
-	ΔE = OD (First point) - OD (First point+1)	* 60 / 18

(2) Last point - 1 to last point

Reaction slope	Reaction OD value	Value for one minute
-	ΔE = OD (Last point -1) - OD (Last point)	* 60 / 18

*6 Calculation for max. ΔE

Reaction slope	Reaction OD value	Value for one minute
+	ΔE = OD (point +1) - OD (point)	* 60 / 18
-	ΔE = OD (point) - OD (point+1)	* 60 / 18

$1 \leq point,\ point + 1 \leq Last\ point$

(2) Basic operation formula for RATE reaction OD value

Reaction	1 step	2 step	
		Self blank	Self blank nothing
+	△Pxi	△Pwi−KI*△Pyi	△Pwi
−	−△Pxi	−(△Pwi−KI*△Pyi)	−△Pwi
	xi: First Point～Last Point	wi: First Point1 ～Last Point1 yi: First point2～Last point2	KI: (R1+S)/(R1+R2+S)

△: The value that converts the slope 0 calculated by method of least square between photometry point

2) END processing

(1) Basic operation form for END reaction OD

Reaction	1 step		2 step	
	First, Last designated	Last only designated	First & Last is designated	Last only designated
+	Px−K1*P0	Px	(Px−K2*P0)−(K3*Pz−K2*P0)	K2*Px−K1*Pz
−	−(Px−K1*P0)	−Px	−{(Px−K2*P0)−(K3*Pz−K2*P0)}	K1*Pz−K2*Px
	K1=(R1/(R1+S) x: Last point		K2=(R1/(R1+R2+S) K3=(R1+S)/(R1+R2+S)	x: Last Point1 z: Last Point2

Caution) On END ass'y, the first point is P0.

3) FIXED processing

(1) Basic operation form for FIXED reaction OD

Reaction	1 step		2 step	
	First & Last is designated	Last only designated	First & Last is designated	Last only designated
+	Px−Py	Px	(Pw−Px)−K1*(Py−Pz)	Pw−K1*Py
−	−(Px−Py)	−Px	−{(Pw−Px)−K1*(Py−Pz)}	−(Pw−K1*Py)
	x: Last point y: First point		w: Last Point1 y: Last Point2 x: First Point1 z: First point2	K1: (R1+S)/(R1+R2+S)

Caution) Presupposition : On first step, First & Last point is in P1 to P27.

4) Processing of sample blank

Abstract

The value of reaction OD is calculated as a sample blank item by analyzing the emit item and the blank item individually in the same sample and then performing subtraction in the level of the value for reaction OD.

Basic operation formula

(Value of reaction OD for sample blank) = (Value of reaction OD for emit item) - (Value of reaction OD for blank item)

The value of the reaction OD for the sample blank becomes the data of the emit item.

Others

Process the value of the reaction OD as follows.

< 1. If either the value of the reaction OD for the emit item or the blank item cannot be calculated. >

The value of the reaction OD as the sample blank item is handled as if there is no data, and the abnormal value mark is attached as OR type for the emit item and blank item.

< 2. If either the value of the reaction OD for the emit item or blank item can't be analyzed by reagent error or sample error. >

The value of the reaction OD for the sample blank is calculated for a data item that exists as a sample blank item, and the abnormal value mark is the same as the above.

< 3. If either the value of the reaction OD for the emit item or blank item has an abnormal value mark. >

The abnormal value mark is attached to the value of the reaction OD for the sample blank.

4. Processing the data check

1. Processing the OD level check

1) Check for OD2. 5000 over

(1) Check timing

Immediately after the WB correction.

After the two wavelength corrections.

(2) Check contents

In each photometry point, the following item is checked and the error mark is attached.

Check if the value of the water blank base (photocal data base) for the measured wavelength (max. 2 wavelength) that exceeds 2.5 is checked.

Check if the value of the OD for photometry point exceeds 2.5 after reagent blank correction and 2 wavelength correction.

(3) Data mark

If the value of the reaction OD is calculated using photometry the point exceeds OD 2.5, the data mark "@" is attached.

2) Check the value of reagent OD

(1) Check timing

If the reagent blank is measured after 2 wavelength corrections.

Except if the reagent blank is measured, after 2 wavelength corrections.

(2) Check contents

The value of OD after 2 wavelength corrections for the smaller photometry point of the first point set in the analysis parameter (if the reagent blank is measured).

The value of OD after 2 wavelength corrections for the bigger photometry point of the last point set in the analysis parameter (if the reagent blank is measured).

The limitation range for the value of the reagent blank OD set in the analysis parameter about the above value of OD.

Except if the reagent blank is measured.

The limitation range for the value of the reagent blank OD set in the analysis parameter about the value of measured OD after 2 wavelength correction at photometry point P0.

(3) Data mark

Check of first point is under --- [u] over ---[y]

Check of last point is under --- [U] over ---[Y]

3) Check for MAX/ MIN OD

(1) Check timing

If the value of reaction the OD for the rate item or fixed item is calculated.

(2) Check contents

If the check for the value of the reaction OD is designated, the check is performed.

(See the calculation process for the value of the reaction OD.)

(3) Data mark

Over Max. OD [D]

Over Min. OD [B]

4) Check available point

(1) Check timing

If the value of the reaction OD for the rate item is calculated.

(2) Check contents

Checked if the available photometry point of the reaction OD calculation is 3 points or more.

(3) Data mark

The available photometry point is 3 points or less.

5) Check for linearity

(1) Check timing

If the value of the reaction OD for the rate assay is calculated.

(2) Check contents

The linearity of the reaction curve during calculation for the value of the reaction OD.
(See the processing of the value of reaction OD.)

(3) Data mark

Linearity error [*]

6) Check for opposite reaction

(1) Check timing

If the value of the reaction OD for rate assay is calculated.

(2) Check contents

The counter reaction of the reaction curve during calculation for the value of the reaction OD.
(See the processing of the value of reaction OD.)

(3) Data mark

Counter reaction error . [*]

7) Check for data

(1) Check timing

If the value of the reaction OD is calculated.

(2) Check contents

Rate, end, and fixed items if the check designation exists in the time of calculation for the value of reaction OD.
Check is performed if the reaction slope is set "+".

(a) DATA CHECK 1

After setting the three photometry points to check starting by parameter and three coefficients for judgment, it is judged using the formula below.

$K < (OPx-OPy) / (OPz-OPy) <= L$

If the above formula isn't satisfied, a data mark is attached.

OPx: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPy: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPz: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

$Px < Py < Pz$

K: Coefficient for judgment

L: Coefficient for judgment ($0 <= K < L < 2.0000$)
If (Value of reaction OD) < M , the check isn't performed.

M: Coefficient for judgment ($0 < M < 2.5000$)

(b) DATA CHECK 2

judged using the formula below.

The photometry point set by parameter becomes.

Pn, Pn+m, Pn+3m, Pn+4m

A=(OPn+m - OPn)/(OPn+2m - OPn)

B=(OPn+2m - OPn+m)/(OPn+3m - OPn+m)

C=(OPn+3m - OPn+2m)/(OPn+4m - OPn+2m)

(MAX(A,B,C)-MIN(A,B,C))/AVE(A,B,C) <= K

If the above formula isn't satisfied, the data mark is attached.

OPn: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+2m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+3m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+4m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

MAX: Maximum value in the bracket.

MIN: Minimum value in the bracket.

AVE: Average value in the bracket .

K: Coefficient for judgment (0 < K) Setting value using parameter.
If (Value of reaction OD) < M , the check isn't performed.

M: Coefficient for judgment (0 < M < 2.5000) Setting value using parameter.

(c) DATA CHECK 3

After setting one of the photometry points to start checking using a parameter and two coefficient for the interval and judgment, it is judged using the formula below.

A=(OPn+m - OPn)

B=(OPn+2m - OPn+m)

C=(OPn+3m - OPn+2m)

D=(OPn+4m - OPn+3m)

(MAX(A,B,C)-MIN(A,B,C))/AVE(A,B,C) <= K

If the above formula isn't satisfied, the data mark is attached.

OPn: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+2m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+3m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

OPn+4m: Value of measured OD at designated photometry point.
(After reagent blank correction and 2 wavelength corrections.)

MAX: Maximum value in the bracket.

MIN: Minimum value in the bracket.

AVE: Average value in the bracket.

K: Coefficient for judgment (0 < K) Setting value by parameter.
If (Value of reaction OD) < M , the check isn't performed.

M: Coefficient for judgment (0 < M < 2.5000) Setting value using parameter.

(3) Data mark

If the above formula for judgment isn't satisfied. [Z]
If the value of OD for each check point is abnormal. [&]

2. Processing of the check for concentration level

1) Dynamic range check

(1) Check timing

Immediately after the calculation of concentration.

(2) Check contents

The check is performed in the dynamic range set in the condition of each item analysis, and the mark is attached if it is out of range.

(3) Data mark

If it exceeds the upper limit. [G]

If it is below the lower limit. [F]

2) Panic range check

(1) Check timing

At the end of calculation for final concentration.

(2) Check contents

The check is performed in the panic value range set in the condition of each item analysis, and the mark is attached if it is out of range.

(3) Data mark

If it is out of range (except lower limit to upper limit). [P]

At this time, the alarm can be issued.

3) Range check for the normal value/ POS/ NEG check

(1) Check timing

At the end of calculation for final concentration after checking of panic value.

(2) Check contents

a. The check is performed in the normal value range set for the condition of each item analysis, and the mark is attached if it is out of range.

b. If the level check is designated, the check is performed in the level of the range set in the condition of each item analysis.

(3) Data mark

If not in the level check.

If it exceeds the upper limit. [H]

If it is below the lower limit. [L]

If the level check is designated.

If it exceeds the upper limit. [P]

If it is below the lower limit. [N]

4) Check for re-run level

(1) Check timing

If the final concentration value has been calculated and after the check of normal value range.

(2) Check contents

Repeat run level set by repeat run analysis condition

(3) Data mark

If it exceeds upper limit value. [J]

If it is under the lower limit value. [K]

5) Cross-check items

(1) Check timing

The operated items designated in the check condition between items are all entered after final concentration calculation, or after the calculation of one piece of sample data has been performed.

(2) Check contents

The check is performed for the setting range, operation formula, and item combination set by the check condition between items for concentration value.

If the operation results are outside the setting range, it's attached the mark on all operated items.

(3) Data mark

If the range is outside the lower limit to upper limit range. [T]

6) Calculated Test

(1) Check timing

After performing the necessary tests are output in CONC, or after calculating the results of one sample.

(2) Check contents

Checking will be performed against the CONC value along with the conditions that are designated by CALCULATED TEST CONDITION, such as Test Matching, Formula and Allowed Range, then if the results are out of the designation, appropriate marks will be attached to the results.

The same process will be performed as the Normal Range and POS/NEG.

(3) Marks

If 'Level Check = NO'

Exceeds the Upper Limit: [H]

Below the Lower Limit: [L]

If 'Level Check = YES'

Exceeds the Upper Limit: [P]

Below the Lower Limit: [N]

7) QC Check

< Single Check (per One Test) >

Tests to be checked

On the QC condition, per one test, six types of Control Limits can be set in maximum. Each Control Limit Value will be used for checking results that are designated as SINGLE in the parameter. There are two types of Control Limit Values which can be designated by the QC condition.

a) Pre-set Mode

b) Accumulated Value

c) OFF mode (Checking will not be done.)

(1) Check timing

On the QC samples, after checking the Correlation Correction, checking will be performed for one test per type.

(2) Check contents

Checking will be performed based on the Control Limit Value Range designated by the QC condition, then if the result is out of range, a mark will be attached to the result.

(3) Flags

Out of Control Limit Range: [1]

< Multi-Rule Check >

Tests to be checked.

On the QC condition, per one test, on the one that is set as 'MULTI' of one set (two types) of six types in maximum, which are checked by the QC logic as shown in the next.

(1) Check timing

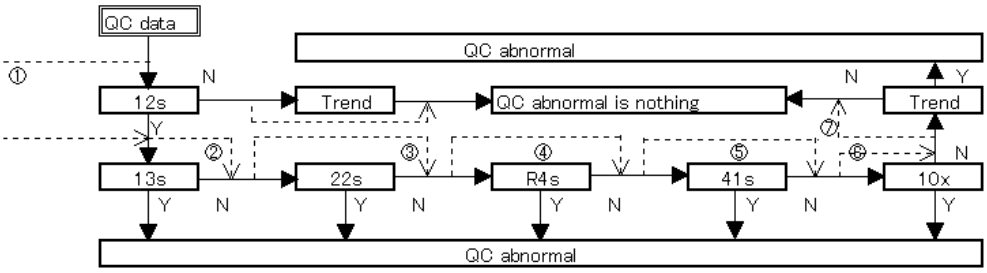
If any of the results of a group for QC sample are output.

(2) Check contents

Along with the QC Check logic, if the result is out of range, a mark will be attached to the result.

(3) Marks

Out of Control Limit Ranges: [1] - [7]



Explanation of QC logic

QC ABNORMAL

Indicates that the result was out of the control limit.

NO QC ABNORMAL

Indicates that the result was within the control limit.

12s

Indicates that the QC results exceeded the control limit of 'MEAN ± 2SD'.

13s

Indicates that the QC results exceeded the control limit of 'MEAN ± 3SD'.

22s

Indicates that two consecutive QC results exceeded the control limit of 'MEAN ± 2SD' in the same direction.

R4s

Either of two QC results, are consecutive in H/L, exceeded 'MEAN + 2SD', and the other one exceeded 'MEAN -2SD', or exceeded the range of '4SD'.

41s

Checking if the four consecutive results exceeded the control limit of 'MEAN + 1SD', or 'MEAN -1SD'.

10x

Seven to ten consecutive QC results exceeded the '+' side of '-' side of control limit.

Others

For the mark, 'X', when QC analysis (with a twin of H/L) was performed, if one was marked (including QC marks) and another one was not marked, 'X' will be marked for the QC results of one to remove the QC result from QC control.

5. Processing of data correction

1) OD level correction

(1) Water Blank correction

a) Contents of processing

The following process is performed for each piece of photometry data (OD value) of a cuvette which is sent from ANL.

b) Processing formula

The following calculation is performed for the data of each measuring point of 2 waves.

FPi = Pi - F
Fpi = pi - f (i = 0 to 27)

FPi: WB corrected data (main-wave length).
Fpi: WB corrected data (sub-wave length).
Pi : OD value of each measuring point sent from ANL (main-wave length).
pi : OD value of each measuring point sent from ANL (sub-wave length).
F : WB of the cuvette used for the photometry sent from ANL (main-wave length).
f : WB of the cuvette used for the photometry sent from ANL (sub-wave length).

NOTE: With the one wave method, the above process is performed only for one wave length.

(2) Reagent Blank correction

a) Contents of processing

RB table data of the corresponding item is subtracted from the WB corrected data for each wave length. ISE, LIH items are excepted from this process.

NOTE: There is a case to pass this correction, which depends on parameters.

b) Processing formula

FPRi = FPi - Ri
FPri = Fpi - ri (i = 0 to 27)

FPRi: RB corrected data of main-wave length.
FPri : RB corrected data of sub-wave length.
FPi : WB corrected data of main-wave length.
Fpi : WB corrected data of sub-wave length.
Ri : RB table data of the corresponding item of main-wave length.
ri : RB table data of the corresponding item of sub-wave length.

NOTE: With the one wave method, the above process is performed only for one wave length.

(3) 2 wavelength corrections

a) Contents of processing

For RB corrected data, subtract the sub-wave length data from the main-wave length data.

b) Processing formula

FPWi = FPRi - FPri (i = 0 to 27)

FPWi: Wavelength data corrected twice.
FPRi: RB corrected data of main-wave length.
FPri : RB corrected data of sub-wave length.

NOTE: With the one wave method, FPWi = FPRi.

(4) Liquid amount correction

a) Contents of processing

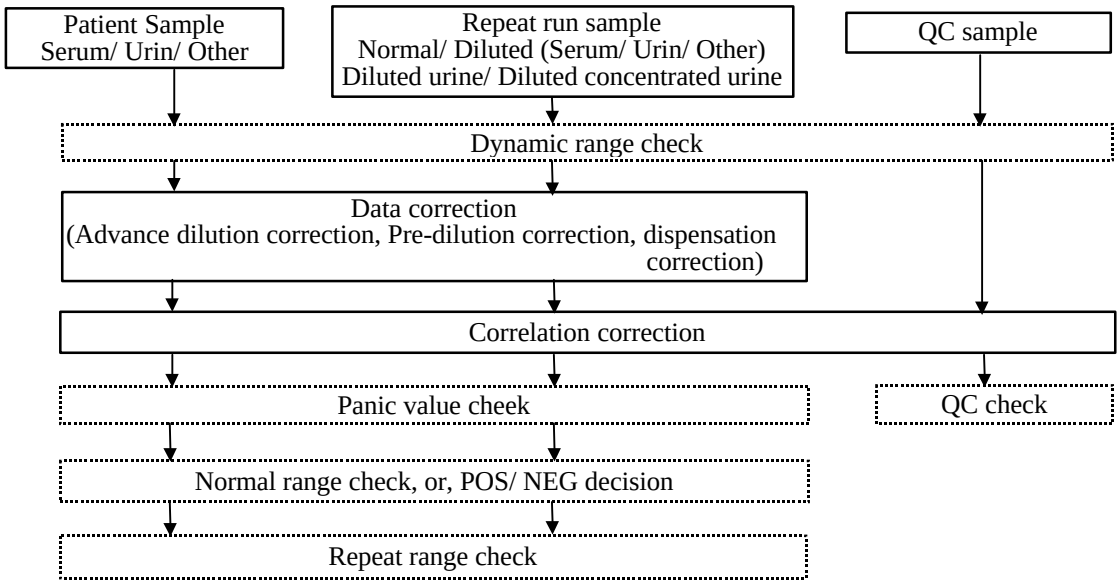
Correct OD change caused by variation of R-volume and S-volume.

b) Processing formula

Refer to the "OD value processing."

1) Concentration level correction

(1) Processing flow



(2) Contents of the correction

Data correction

Object of the correction:

Samples measured in the different S or R volume of the calibration sample, except reagent blank samples and calibration samples, are corrected using the following formulas.

Basic formula-1 $C = \{(Sd + V1 + V2) / Sd1 \} / \{(S + v1 + v2) / S1 \} * Cd$

- C: corrected concentration
- Sd: sample volume of diluted/ concentrated/ diluted urine sample (including diluent)
- Sd1: sample volume of diluted/ concentrated/ diluted urine sample (not including diluent)
- V1: R1 reagent volume of diluted/ concentrated/ diluted urine sample (including diluent)
- V2: R2 reagent volume of diluted/ concentrated/ diluted urine sample (including diluent)
- Cd: concentration before correction
- S: sample volume in normal analysis (including diluent)
- S1: sample volume in normal analysis (not including diluent)
- v1: R1 reagent volume in normal analysis (including diluent)
- v2: R2 reagent volume in normal analysis (including diluent)

Basic formula-2 $C = K * Cd$

- C: corrected concentration
- K: advanced dilution multiple / pre-dilution multiple
- Cd: concentration before correction

In case of repeat-run of the pre-dilution method and the pre-dilution multiple is different from the normal-run, the following formula is implemented.

$C = Kd / K * Cd$

- C: corrected concentration
- K: pre-dilution multiple of normal-run
- Cd: concentration before correction

Correlation correction

correction formula $C = A * Cd + B$

- C: corrected concentration
- A: correlation correction coefficient "A"
- B: correlation correction coefficient "B"
- Cd: concentration before correction

6. Processing for concentration conversion

1) Objective samples of the concentration conversion

(1) Basically all samples (ISE items, LIH), except RB blank samples and calibration samples, are converted to the concentration.

2) Concentration conversion terms

(1) Inner flag of OD/ CONC conversion designation is set at the CONC.

(2) If calibration failed and designated to use the last calibration in the calibration parameters, the calibration curve must exist.

(3) If calibration failed and designated to output the OD value in the calibration parameters, the last calibration curve must be successful.

(4) Reaction OD is existing.

(5) Depending on the selection of inner flag, the lot number used for RB measure and calibration must be the same.

(6) Depending on the selection of inner flag, RB measure must be successful.

(7) Calibration stability must be in the limit.

(8) Both onboard stability of the reagent must be in the limit.

3) Processing for concentration conversion

(1) OD value analyzed and calculated is converted to the concentration by the function of calibration curve of the item.

Concentration = f (reaction OD value)

f: functions of calibration curves of the items are: Linear, Polygonal line, Quadratic curve, Tertiary curve, Reversed tertiary function, EIA type (1 to 4), Spline function

(2) Special processing at each calibration curve

(a) Linear, Polygonal

Reaction OD that exceeded each STD's OD used for calculating the calibration curve is converted to the concentration by the extended calibration line.

(b) Quadratic and Tertiary formula, and Tertiary in verse function, Spline function

Reaction OD that exceeded each STD's OD used for calculating the calibration curve is not converted to the concentration and the output becomes the OD value with "!" mark.

(c) EIA type

Reaction OD that exceeded each STD's OD used for calculating the calibration curve, is not converted to the concentration and the output becomes the OD value with "!" mark.

In case it is not possible to calculate the concentration by the reaction OD value, and the output becomes the OD value with a "!" mark.

7. Processing of LIH data

1) Data of LIH object

Object data	Contents
Water blank data	PBn n=410, 480, 570, 600, 800
LIH measured data	Pn n=410, 480, 570, 600, 800

Px indicated the measured OD value of the photometry wavelength x

2) Object sample and items

(1) Sample type

Only normal serum samples.

(2) Item type

Items designated for LIH analysis are not subjected to sample pre-dilution and must also satisfy the smallest response liquid amount when dispensing R1 reagent.

3) Data operation

(1) Operation object

Contents of step 1) above

(2) Operation contents

	Operation items	Operation form	
WB correction	***ODn***	Pn－PBn	n=410,480,570,600,800
Liquid amount correction	ODn	K×(ODn)	n=410,480,570,600,800
Lipemic judgement value	△OD(660-800)	OD660-OD800	
Icterus judgement value	△OD(480-570)-△OD(600-800)	(OD480-OD570)-(OD600-OD800)	
Hemolytic judgement value	△OD(410-480)-△OD(600-800)	(OD410-OD480)-(OD600-OD800)	

K={(R1 reagent dispense amount)}{(R1 reagent dispense amount + Sample dispense amount)/300}＊(18/Sample dispense amount)

Judgment flow

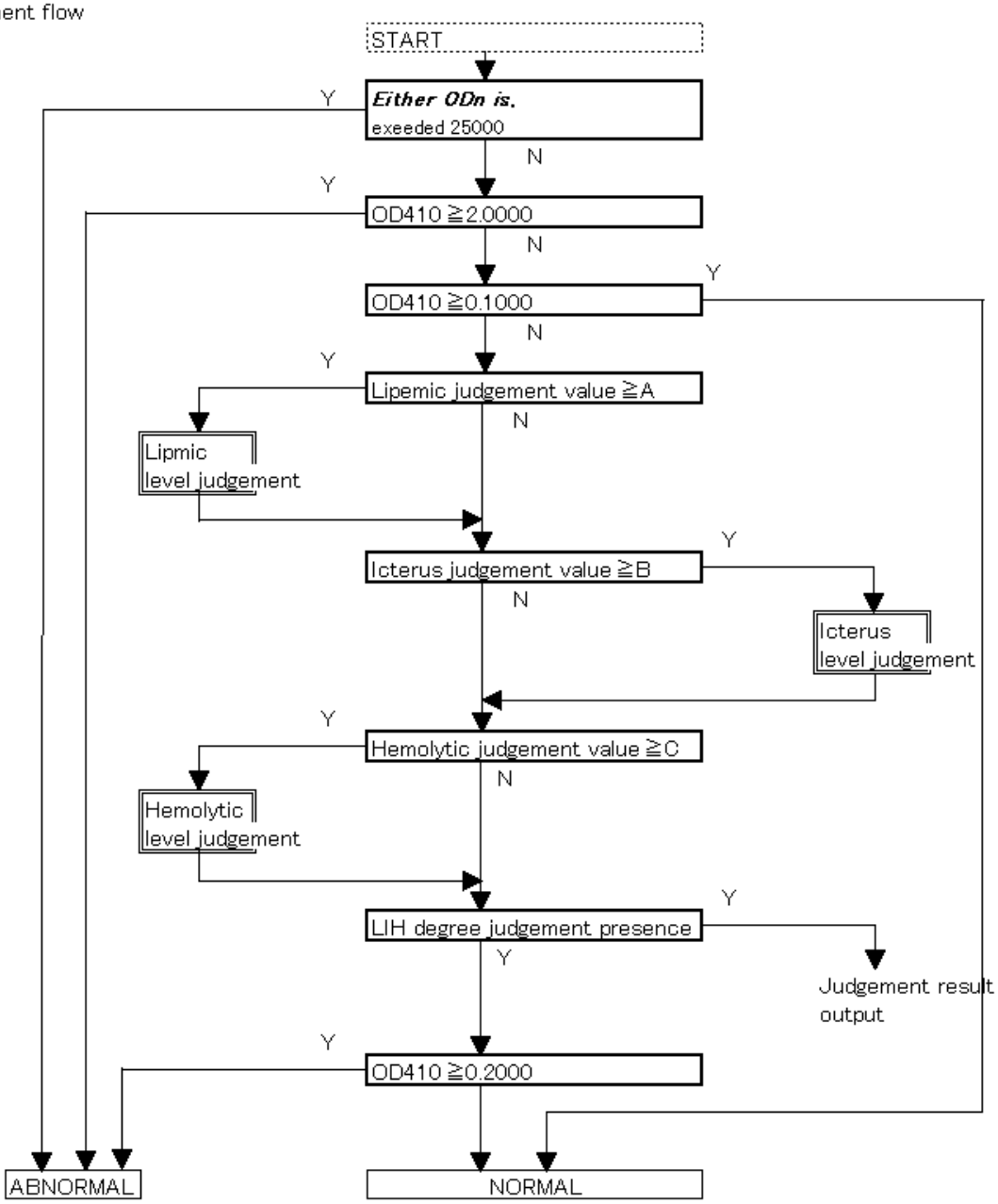
Refer to the next page

5) Level judgment and type for indication and print

	Lipemic	Icterus	Hemolytic
Judgement object data	△OD(660-800)	△OD(480-570) -△OD(600-800)	△OD(410-480) -△OD(600-800)
Level			
N			
+	≧A	≧B	≧C
++	≧A1	≧B1	≧C1
+++	≧A2	≧B2	≧C2
++++	≧A3	≧B3	≧C3
+++++	≧A4	≧B4	≧C4
ABN	It's attached to all (lipmic, icterus, hemolytic) by judgement flow.		

A, A1, A2, A3, A4 is set by parameter menu.
B, B1, B2, B3, B4
C, C1, C2, C3, C4

4) Judgement flow



Output data

(1) Inside data

Level	Inside data
NORMAL	0
+	1
+ +	2
+ + +	3
+ + + +	4
+ + + + +	5
Not analyzed	Space
ABN	6

(2) Print out data

LIH data is printed out as following type.

	Print out name	Print out type
L	LIP	N, + to +++++, ABN, Space
I	ICT	N, + to +++++, ABN, Space
H	HEM	N, + to +++++, ABN, Space

8. ISE data processing

Summary:
ISE sample data is forwarded to ANL as an ISE data message. This is not at the same timing to the ITEMs measured in the ANL.
Unlike other items, ISE data is forwarded as concentration value data.
As ISE data, there are Sample data, ISE calibration data and ISE selectivity data.

1. SAMPLE data processing

1). Normal, Re-run, Emergency, Stat and QC sample

(1) AX + B (manual facter correction)

A and B, assigned in the Caliblation Parameter menu, is used for the correction.

C = C1 * A + B

C: corrected concentration

C1: concentration data forwarded from ANL

(2) Offset/ Factor correction (ACAL correction)

This is operated only for the ISE item designated the ACAL.

NOTE: ACAL/ MCAL can be designated to each item and to sample kinds.

Correction using standard sample:

Offset correction Factor correction

Cx = C + (S - S1) Cx = S / S1*C

Cx: corrected concentration by the standard sample

C: concentration before correction

S: indicated concentration of the standard sample

S1: measured concentration of the standard sample

(2) Correlation correction

Refer to the data correction.

(3) Data check

The following checks are performed, and the data mark is attached.

CHECK item	Content	Method	Flag
Range over	A/D range over on Internal Standard or Mixture	A	!
Short mixture		A	#
Mechanical error A/D error	Mechanical error in ISE A/D error in ISE	A	?
ANL mechanical error	Analysis is not completed due to a ANL mechanical error	A	?
Normal value range	Except QC sample	B	H L
Cross-item check	Except QC sample	B	T
Panic value	Except QC sample	B	p
Dynamic range over		B	G F
QC range over	Only for QC sample	B	

Method A: check error flag in the data message.

Method B: check concentration by value set as the parameter.

2. ACAL data processing (by the Standard Sample)

As same to the calibration of not ISE items, 4 data are being forwarded from ANL and following process are performed by their representative value.

For information about how to calculate the representative value, refer to “Basic Operation.”

1) Offset correction

Offset = indicated value of standard sample - measured representative value

2) Factor correction

Factor = indicated value of standard sample / measured representative value

Value of standard sample is designated in calibration parameter.

Selection of offset correction/ factor correction is set in system maintenance.

Offset correction is set as a default.

3. ISE calibration data processing

ISE calibration is performed and the data is forwarded from ANL, if DPR is in the following mode and requiring ISE caliblation.

Mode: WARMUP. STANDBY, PAUSE and ISEDIAG

1) Cease calibration data processing, if the message “ISE operation completed ” is received.

If ISE calibration data is being received, disregarded it.

2) The calibration result file is updated by the latest piece of data, if message “ISE operation completed ” is received.

Calibration result is indicated in ISE Status menu of System Satatus.

There are 3 kinds of calibrations of which execution is designated in the ISE calibration measure demand. They are only Serum, only Urine and both Serum + Urine.

4. ISE selectivity check data processing

ISE selectivity check is performed and data is forwarded from ANL if DPR is in the following mode and an ISE selectivity check is required.

Mode: WARMUP, STANDBY and PAUSE

1) Cease selectivity check data processing if message “ISE operation completed ” is received.

If ISE selectivity check data is being received, it is ignored.

2) If completed normally, the selectivity data is calculated using the following process.

The NA selectivity data is set using the mean value of the NA concentration data of the 3rd and 4th turn.

The K selectivity data is set using the mean value of the K concentration data of 7th and 8th turn.

- Do not check the error status.
- Do not make any corrections.
- The selectivity result file is updated by the latest piece of data.

■ Special process for patient sample (except rerun sample)

1) Sample number asignment

Sample number is assigned when registering the sample.
Although there are exceptional cases in which the sample number is assigned at the time of inquiriy by the ANL, all Sample numbers are assigned and administrated by DPR.

2) Restricted analysis items by Sample kind

(1) Urine

Since LIH analysis cannot be performed, item selection and data processing are not performed.

(2) Other

Since LIH and ISE analysis cannot be performed, item selection and data processing are not performed.

3) Repeat run item extraction process

Item extraction for repeat run is performed using 2 parameters.

(1) Error flag extraction

Repeat run item is determined by the data mark attached to the analysis data.
There are 3 types of repeat run, normal/ diluted/ concentrate, which are assigned by setting of each data mark using the AND/ OR function.
Refer: Menu, Parameter/ Repeat Run Common Condition
Priority of the 3 kinds are Normal > Diluted > Concentrated.
With ISE, only normal is applied for repeat run, even if it is extracted as diluted or concentrated.
LIH item is not used for repeat run item decision.

(2) Group extraction

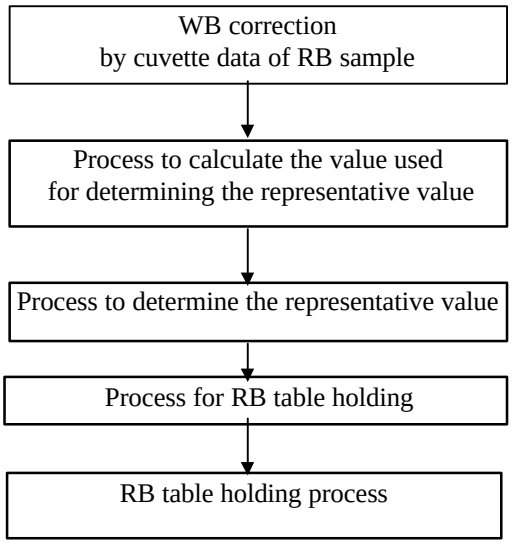
The item, which is assigned a relationship with the item extracted above in process(1), is also extracted for repeat run. If the group extracted item is also extracted using the process, the repet run type has higher priority.

(3) Repeat run item registration

You can assign repeat run item selection from the menu: Item selection/ Repeat Run Item Selection.

9. Reagent blank data processing

1) Process flow


WB correction
by cuvette data of RB sample
Process to calculate the value used
for determining the representative value
Process to determine the representative value
Process for RB table holding
RB table holding process

2) Contents of the process

(1) Process to calculate the value used to determine the representative value

If all the data (1st to 4th) designated by specific test parameters are taken, the following process is performed for the measuring point data assigned by the specific test parameters.

RDI = FPWL - FPWF (I = 1 to 4 in Max.)

RDI : Figure for determining representative value.

FPWL: OD value corrected by WB at the larger LAST measuring point designated by the parameter.

FPWL: OD value corrected by WB at the smaller FIRST measure point designated by the parameter.

(2) Process to calculate the representative value

Representative value is determined with the Multiple Process Method by RDI from (1) above.

(3) Process for RB table holding

Select the cuvette which comes under the 2 representative values determined by (2) above. Then calculate the mean values for each measuring point.

(4) RB table holding process

Hold the data figured out using (3) above for all measuring points in the RB table of the item.

(5) History management process

Store I memory the latest 60 RB tables. The graph can be displayed to indicate the trend.

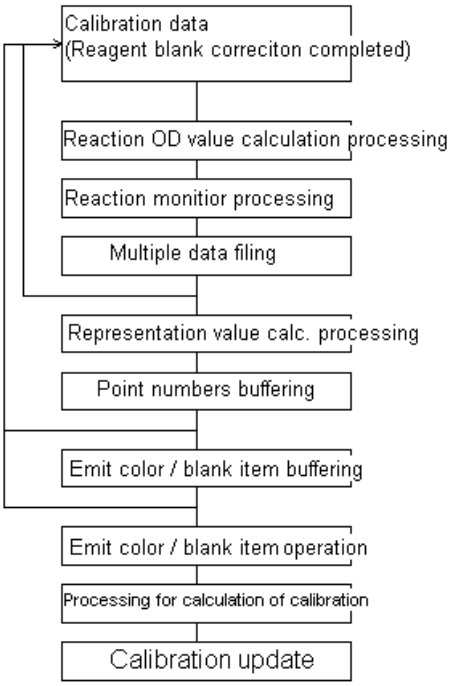
History changing timing :

Store in memory the RB table if executing process (4) above. If the number of tables is greater than 60, the oldest one is erased.

(6) Data files related

10. Processing of calibration sample

1. Processing flow



2. Calibration curve type

	Form name	Calibration form
1	Straight line	$y = Ax$ or $y = Ax + B$ (AA type)
2	Broken line	$y = A_n x + B_n$
3	Quadratic equation	$y = Ax^2 + Bx + C$
4	Teritary equation	$y = Ax^3 + Bx^2 + Cx + d$
5	Teritary inverse function	$x = Ay^3 + By^2 + Cy + d$
6	EMIT TYPE 1	$y = Ro + \frac{Kc}{1+\exp(-a+b\ln x)}$
7	EMIT TYPE 2	$y = Ro + \frac{Kc}{1+\exp(-a+b\ln x+Cx)}$
8	EMIT TYPE 3	$y = Ro + K\exp\{a\ln x + b(\ln x)^2 + C(\ln x)^3\}$
9	EMIT TYPE 4	$\ln x = a + b\frac{y-Ro}{100} + c\left(\frac{y-Ro}{100}\right)^2 + d\left(\frac{y-Ro}{100}\right)^3$
10	Spline	$y = a_n x^3 + b_n x^2 + c_n + d_n$

3. Processing for generation of calibration curve

The coefficient of the calibration curve is calculated using the combination of the reaction OD value in each standard and the display value and set in the analysis parameter.

(1) Calibration curve type and numbers for standard

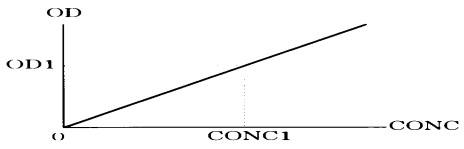
Straight line and broken line

	AB	AA	2AB	3AB	4AB	5AB	6AB	7AB
Standard Qty.	1	2	2	3	4	5	6	7

Others

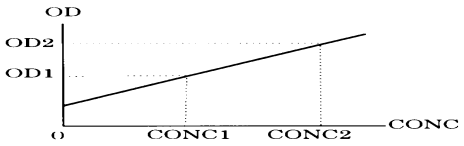
1. Processing for calibration curve generation

(1) AB type



$$A = \frac{CONC1}{OD1}$$

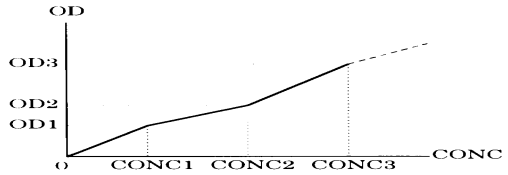
(2) AA type



$$A = \frac{CONC2 - CONC1}{OD2 - OD1}$$

$$B = \frac{CONC2 \times OD1 - CONC1 \times OD2}{CONC2 - CONC1}$$

(3) 2～7AB type



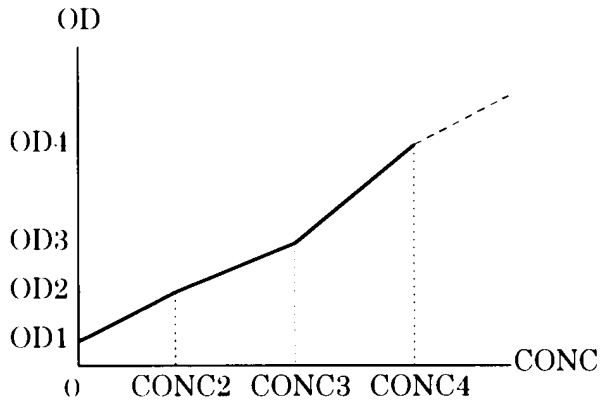
$$A = \frac{CONC1}{OD1}$$

$$An = \frac{CONCn - CONCn-1}{ODn - ODn-1} \quad (n: 2 \sim 7)$$

$$B = \frac{CONC2 \times OD1 - CONC1 \times OD2}{CONC2 - CONC1}$$

$$Bn = \frac{CONCn \times ODn-1 - CONCn-1 \times ODn}{CONCn - CONCn-1}$$

4) 2～7AB



$$A1 = \frac{CONC2}{OD2 - OD1}$$

$$B1 = OD1$$

$$An = \frac{CONCn - CONCn-1}{ODn - ODn-1} \quad (n: 2 \sim 7)$$

$$B = \frac{CONC2 \times OD1 - CONC1 \times OD2}{CONC2 - CONC1}$$

$$Bn = \frac{CONCn \times ODn-1 - CONCn-1 \times ODn}{CONCn - CONCn-1}$$

(5) Quadratic formula, tertiary formula, tertiary inverse function

- If the value of concentration " 0 " is not in the standard.

  The calibration curve is generated using the smallest squares method and using each standard and measured OD value, OD value = 0, and Concentration value = 0.

- If the value of concentration " 0 " exists in the standard.

  The calibration curve is generated using the smallest squares method and using each standard and measured OD value.

(6) EMIT TYPE 1 to 4

Refer to separate page.

(7) Spline

If the concentration value "0" is not in the standard :

The calibration curve is generated using the smallest squares method and using each standard and the value of the measured OD, OD value = 0, and concentration value = 0.

If the concentration value "0" is in the standard :

The calibration curve is generated using the smallest squares method and each standard and the measured OD value.

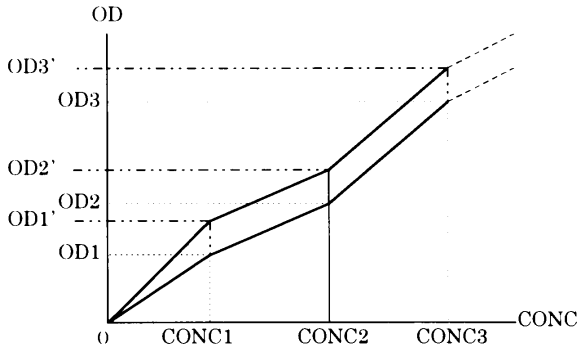
2. Processing of one point correction

(1) Processing contents

On 2AB to 7AB, one of many standards is analyzed, and the reaction OD value of other standard is corrected by the ratio for the reaction OD value of standard and the previous measured standard. Then the calibration curve is generated again.

If the concentration " 0 " as a standard exists, and the data can be corrected using two points (concentration " 0 " and other point).

Ex.1 If concentrations " 0 " are not in the standard.

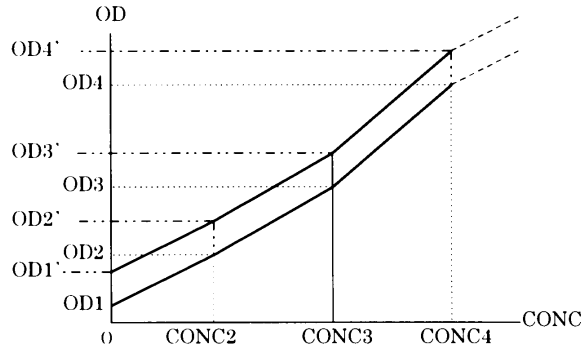


If one point correction is executed by the CONC. standard, the following calculation is performed.

1. Each photometry point is corrected.
OD n' = OD n x (OD2 / OD2 ')

2. Calibration curve is calculated again.

Ex.2 If concentrations " 0 " exist in the standard.



ODn :previous OD value ODn': OD value after correction

If two point correction is executed using CONC1 (concentration 0) and the other point (CONC3), the following calculation is performed.

1. Reaction OD value of CONC.1 and CONC.3 (OD 1 ' & OD3 ') is used.

2. Each point is corrected.
OD n' = α (OD n - ODI) + β
α = (OD3 ' - OD1 ') / (OD3 - OD1)
β = OD1 '

11. QC sample special processing

1) Sample number assignment

In test requisition, the sample number isn't assigned. The numbers are assigned when analysis data is sent from ANL.

2) QC sample special processing

With LIH, check between items and operation between items. QC data process isn't performed.

3) Other processing

- Processing if the index is changed

If the index is changed and if the QC sample data exists in the start condition menu and it's also for the calculation for the value of daily statistics, the middle value of statistics calculation in each sample type, item and level.

- The calculation process of the accumulative value

The accumulative value of the limitation value for QC is calculated from past QC sample data.

The accumulation object is in the QC sample data analyzed in a new index before the index is replaced. (The middle value of daily statistics and daily statistics value are not calculated.)

12. Processing for re-run sample

1) Assignment of sample number

- Standard re-run
- Automatic re-run

2) Processing for special data

- Item for ISE

Re-run type is "normal only" analysis.
Dilution and condensation is performed for normal analysis (auto changed to this mode).

- Operation between items

If all operated items are performed in re-run analysis, the data for operation between items is output as re-run sample data.

- Check between items

If all operated items are performed in re-run analysis, the check between items are performed and an error mark is attached.

- LIH

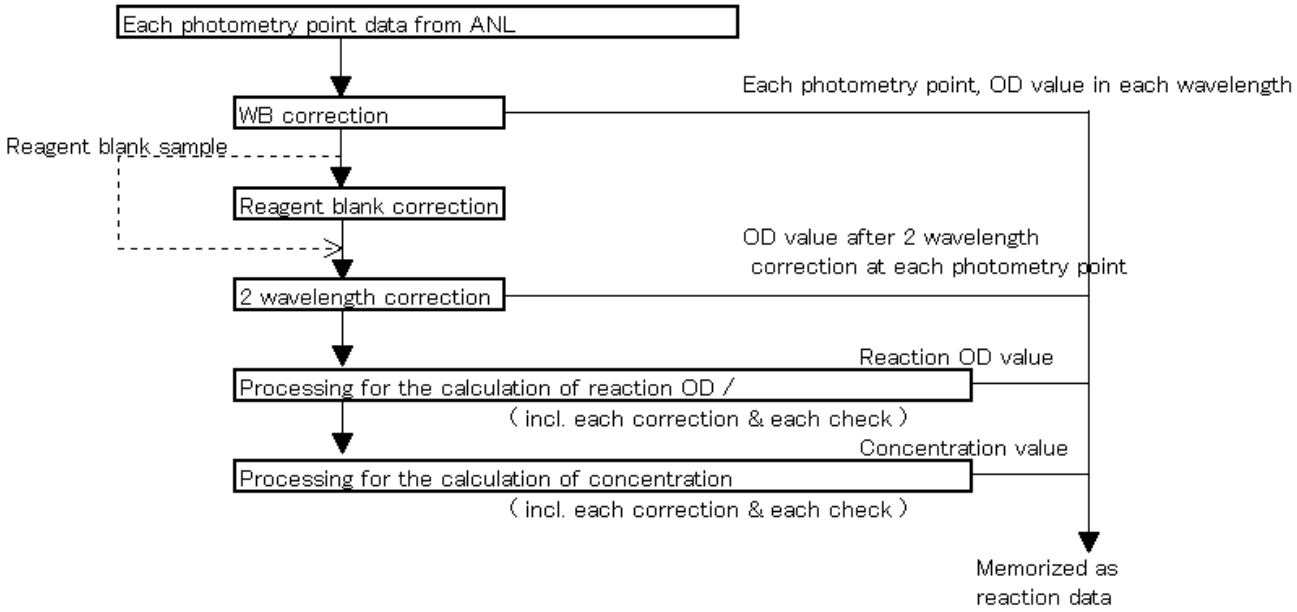
Analysis process and output of analysis data isn't performed.

- Processing for rewriting

This can be set "auto" or "manual" in each item for rewriting when a re-run sample is analyzed.
In the menu of rewriting for re-run, the items ca be selected in each sample for rewriting.
If rewriting is performed for the operation between items and the check between items, they are re-calculated the rewritten data as operated item.

13. Reaction data processing

1. Processing flow


Each photometry point data from ANL
WB correction
Each photometry point, OD value in each wavelength
Reagent blank sample
Reagent blank correction
OD value after 2 wavelength
correction at each photometry point
2 wavelength correction
Reaction OD value
Processing for the calculation of reaction OD /
(incl. each correction & each check)
Concentration value
Processing for the calculation of concentration
(incl. each correction & each check)
Memorized as
reaction data

2 Contents of processing

1) Photometry point data (from ANL after WB correction) adds the value of OD and the value of concentration for the cuvette, and records it on the hard disk. The recording unit is the cuvette. And the data about ISE item and LIH.

2) Processing for the sample blank item

The following processing is performed for the data designated emit/ blank pair.

(1) The reaction data (OD value at each photometry point) is stored in memory as cuvette data for each emit / blank.

(2) The reaction OD value is stored in memory for each reaction OD value (emit / blank each), but the concentration isn't stored in memory.

3) Contents of memory

A maximum of 10000 data cuvettes of reaction data are stored in memory and deleted from the old data in turn.

The abnormal value mark is limited can only be attached to an individual cuvette.

The stored contents are in reaction data file format.

■ Reagent Bar Code Information

Bar code type

(1) Japanese reagent bar code types

Position	Number of digits	Contents	Remarks
1 to 3	3	Manufacturer code	Other than 0 to 9 shall be a reagent ID read error.
4 to 5	2	Item code	Other than 0 to 9 shall be a reagent ID read error.
6	1	Bottle type	
7	1	Reagent type	
8	1	Expiration date (year)	
9 to 10	2	Expiration date (week)	
11 to 13	3	Lot No.	
14 to 17	4	Bottle No.	Other than 0 to 9 shall be a reagent ID read error.
18	1	Check digit	

Note 1: With the 8-digit type, the eighth digit is the check digit, and there are no further digits.
The positions and the number of digits shall be according to internal parameters.
Note 2: When the check digit is not correct, this shall be a reagent ID read error.

(2) Overseas reagent bar code types

Position	Number of digits	Contents	Remarks
1 to 3	3	Item code	Other than 0 to 9 shall be a reagent ID read error.
4	1	Bottle type	
5	1	Reagent type	
6 to 9	4	Expiration date	Other than 0 to 9 shall be a reagent ID read error.
10 to 13	4	Lot No.	
14 to 17	4	Bottle No.	
18	1	Check digit	

Note: The positions and the number of digits shall be according to internal parameters.

Bottle type

ID	Bottle type	Remarks
1	30ml	
2	40ml	
3	60ml	
4	80ml	
5	15ml	
Other than the above	-	Incorrect bottle type

Reagent type

ID	Reagent type	Remarks
1	R1	Set error when set to the R2 tray (R2 ⇒ R1)
2	R2	Set error when set to the R1 tray (R1 ⇒ R2)
3	R3	Incorrect reagent type
4	R4	Incorrect reagent type
5	Diluent	Incorrect reagent type
6	Detergent	Incorrect reagent type when at a position other than a position specified for detergent
Other than the above	-	Incorrect reagent type

Expiration date

(1) Japanese specifications

Present year	Read value	Indicated year	Remarks
1997	5 to 9	199X	
	0 to 4	200X	
1998	6 to 9	199X	
	0 to 5	200X	
1999	7 to 9	199X	
	0 to 6	200X	
2000	8 to 9	199X	
	0 to 7	200X	
2001	9	199X	
	0 to 8	200X	
2002 to 2009	0 to 9	200X	
2010	0 to 9	201X	

X: Read value
When the read value is other than 0 to 9, this shall be a reagent ID read error.

(2) Overseas specifications

Position	Range	Contents	Remarks
Sixth and seventh digit	01 to 12	Month	
Eighth and ninth digit	2 year digits	Year	
-	Other than the above	-	Reagent ID read error

Lot No.

ID	Remarks
Overseas: 4 characters	
Japan: 3 characters	

Bottle No.

ID	Remarks
0000 to 9999	
Other than the above	Reagent ID read error

■ Errors at the time of reagent check

Error contents

No.	Indication	Contents	Check timing	Remarks
1	R.ID Read Error Reagent ID read error	There is a reagent bottle at the reagent ID read position, but the reagent ID can not be read normally.	At the time of reagent check	(*4)
2	Undefined Reagent Undefined reagent	The item code for the read ID is not registered by parameter. Not registered for the round.	At the time of display on the reagent status main screen At the time of reagent check	(*4)
3	R2 Reagent Setting error (R2 ⇒ R1)	At the reagent ID read position, R2 reagent exists at the R1 refrigerator. Identification of R1 and R2 is performed by reagent ID. No error in case of R3 or R4.	At the time of reagent check	(*4)
4	R1 Reagent Setting error (R1 ⇒ R2)	At the reagent ID read position, R2 reagent exists at the R1 refrigerator. Identification of R1 and R2 is performed by reagent ID. No error in case of R3 or R4.	At the time of reagent check	(*4)
5	Incorrect Reagent Type Incorrect reagent type	The read reagent type is not correct.	At the time of reagent check	
6	Incorrect Size Incorrect bottle size	The read bottle size is not correct.	At the time of reagent check	(*4)
7	No Bottle No bottle	There is no bottle at the fixed reagent position.	At the time of reagent check	
8	R2 Unest R2 not set	There is no R2 reagent while second reagent YES has been set by parameter.	At the time of reagent check At the time of editing completion	
9	R1 Unset R1 not set	There is no R1 reagent.	At the time of reagent check At the time of editing	
10	No Blank Reagent Blank reagent not set	There is no reagent on the blank side for an item on the coloring side.	At the time of reagent check At the time of editing	
11	Unpaired Reagent No setting for chaining of the same reagent R1/R2	There is no R2 (R1) reagent bottle paired with the R1 (R2) reagent. (Chaining of the same reagent for R1/R2 does not exist.)	At the time of reagent check At the time of editing	
12	Used Reagent Reagent used up	The residual quantity in the R2 (R1) reagent bottle paired with the R1 (R2) reagent for a reagent chaining item is zero.	During reagent check At the time of editing During analysis	

No.	Indication	Contents	Check timing	Remarks
13	No Reagent for Auto ACAL No reagent for auto ACAL	At the time of auto ACAL, the remaining quantity in the reagent bottle for auto ACAL is not sufficient. When an error is caused for one of the bottles in case of reagent chaining, an error shall be caused for R1 and R2 both.	At the time of reagent check (no checking during pause) At the time of editing (no checking during pause) At the time of analysis completion	(*5) (*6) (*7)
14	No Reagent No residual reagent	When the total residual quantity, including chaining, corresponds to one of the following. Alarm volume or less	At the time of reagent check At the time of editing During analysis	(*1) (*3) (*4)
15	Bottle Empty Bottle empty	When the following applies for reagent with chaining Alarm volume or less	At the time of reagent check At the time of editing During analysis	(*2) (*3) (*4)
16	Cleaner Empty No residual detergent	Corresponding to the following. Alarm volume or less	At the time of reagent check At the time of editing During analysis	(*3)
17	Expired Expiration date exceeded	The expiration date is older than the present date.	At the time of display on the reagent status main screen At the time of reagent check At the time of analysis start	
18	On Board Expired Reagent stability period exceeded	The on-board stability is zero.	At the time of display on the reagent status main screen At the time of editingAt the time of analysis start	
19	CAL Expired Calibration stability period exceeded	The calibration stability is zero.	At the time of display on the reagent status main screen At the time of editingAt the time of analysis start	
20	On Board Overrode	The on-board stability has been reset by the operator.	At the time of editing	
21	Cal Overrode	The calibration stability has been reset by the operator.	At the time of editing	

*1) In case of reagent chaining, all reagents apply.

*2) In case of reagents without chaining, this error does not apply (as "no residual reagent" occurs).
In case of reagents with chaining, there may be bottles to which this error applies and bottles to which this error does not apply.

*3) The alarm volume is set for each item by system parameters.

*4) Alarm output

*5) Checking at all bottle positions

*6) Analysis is not performed for bottles for which this error has occurred.

*7) In regard to calculation of the quantity required for auto/forced ACAL

1. Calculation of the required quantity for RB

In case of operation No for serum, urine, or others, the following is performed in regard to the liquid type of operation No.

$V_{Ser}^{RB} = 0$ · · · (1) Required quantity for serum RB
$V_{Uri}^{RB} = 0$ · · · (2) Required quantity for urine RB
$V_{Oth}^{RB} = 0$ · · · (3) Required quantity for other RB

In case of operation Yes for serum, urine, or others, the following is performed in regard to the liquid type of operation Yes.

V_{Ser}^{RB} = Reagent dispensing quantity (serum) x number of multiple measurings · · · (1) Required quantity for serum RB
V_{Uri}^{RB} = Reagent dispensing quantity (urine) x number of multiple measurings · · · (2) Required quantity for urine RB
V_{oth}^{RB} = Reagent dispensing quantity (others) x number of multiple measurings · · · (3) Required quantity for other RB
(The reagent dispensing quantity includes the dummy dispensing quantity.)

2. Calculation of the required ACAL quantity

In case of operation No for serum, urine, or others, the following is performed in regard to the liquid type of operation No.

$V_{Ser}^{ACAL} = 0$ · · · (1) Required quantity for serum ACAL
$V_{Uri}^{ACAL} = 0$ · · · (2) Required quantity for urine ACAL
$V_{Oth}^{ACAL} = 0$ · · · (3) Required quantity for other ACAL

In case of operation Yes for serum, urine, or others, the following is performed in regard to the liquid type of operation Yes.

V_{Ser}^{ACAL} = Reagent dispensing quantity (serum) x number of serum CAL points x number of multiple measurings · · · (1) Required quantity for serum ACAL
V_{Uri}^{ACAL} = Reagent dispensing quantity (urine) x number of urine CAL points x number of multiple measurings · · · (2) Required quantity for urine ACAL
V_{Oth}^{ACAL} = Reagent dispensing quantity (others) x number of other CAL points x number of multiple measurings · · · (3) Required quantity for other ACAL

3. Required quantity V for auto/forced ACAL

3.1 When not 2 items for 1 reagent

When the auto ACAL setting is RB with auto calibration condition setting

$$V = V_{Ser}^{RB} + V_{Uri}^{RB} + V_{Oth}^{RB}$$

When the auto ACAL setting is RB + One point with auto calibration condition setting

$$V = (V_{Ser}^{RB} + V_{Uri}^{RB} + V_{Oth}^{RB}) + (V_{Ser}^{ACAL} + V_{Uri}^{ACAL} + V_{Oth}^{ACAL})$$

When the auto ACAL setting is RB + ALL with auto calibration condition setting

$$V = (V_{Ser}^{RB} + V_{Uri}^{RB} + V_{Oth}^{RB}) + (V_{Ser}^{ACAL} + V_{Uri}^{ACAL} + V_{Oth}^{ACAL})$$

3.2 In case of 2 items for 1 reagent

The required quantity for auto ACAL is the sum of the individual required quantities for auto ACAL for each of the two set items.

■ Reagent Check Processing

Lot No. check

Checking is done when checking is set as Yes by system parameter

Reagent lot No. check at the time of reagent blank measuring

The reagent lot No. in the reagent refrigerator and the current reagent lot No. of the reagent blank (*1) are compared, and an alarm is put out if they are not the same. (Following alarm No. 1, 2)

The check method is as shown below.

Reagent lot No. at the time of RB measuring	Reagent lot No. in the refrigerator	Alarm output	Remarks
nnnn	nnnn	No	
nnnn	Other than nnnn	Yes	
nnnn	No lot No. (space)	Yes	
No lot No. (space)	nnnn	Yes	
No lot No. (space)	No lot No. (space)	No	

***** Caution item *****

Items without reagent blank measuring are not checked.

Reagent lot No. check at the time of calibration measuring

The reagent lot No. in the reagent refrigerator and the current calibrator reagent lot No. (*2) are compared, and an alarm is put out if they are not the same. (Following alarm No. 3, 4)

***** Caution item *****

- Checking is not done for items without ACAL measuring.
- Checking is not done for MCAL items.

R1/R2 lot No. check

When there are several bottles for the same item in the refrigerator, the reagent lot Nos. are compared, and an alarm is put out if they are not the same. (Following alarm No. 5, 6)

The check method is as shown below.

Reagent lot No. at the time of RB measuring	Alarm output	Remarks
All bottles have the same lot No.	No	
There are different lot Nos.	Yes	
No lot No. (space) or mixed lot Nos.	Yes	
All no lot No. (space)	No	

Alarm messages

NO.	Alarm	Remarks
1	R1 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c R1 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c	%2d : Position %s : Item name %c : Sample type Serum : Space Urine : U Others : X
2	R2 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c R2 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c	
3	R1 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c R1 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c	
4	R2 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c R2 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c	
5	R1 DIFFERENT LOT NO. (%s) R1 DIFFERENT LOT NO. (%s)	
6	R2 DIFFERENT LOT NO. (%s) R2 DIFFERENT LOT NO. (%s)	

■ Data marks

● Outline

1) Abnormal value symbols in regard to the hardware attached by ANL
2) Abnormal value symbols attached at the OD value level
3) Abnormal value symbols attached at the concentration value level
4) Abnormal value symbols indicating the data status

● Contents of the marks

Priority ranking	Symbol	Contents	Remarks
Abnormality marks attached by ANL in regard to the hardware			
7	?	Mechanical error	
(19)	!	ISE data A/D error	
6	%	Sample clogging detection	
5	#	Insufficient sample	
4	R	Insufficient reagent	
3	(	Contamination analysis	
Abnormality marks attached at the OD value level			
8	U	Last photometry point reagent OD range undershoot	Checked only at the time of reagent blank analysis
9	u	First photometry point reagent OD undershoot	Always checked at the time of analysis
10	Y	Last photometry point reagent OD range overshoot	Checked only at the time of reagent blank analysis
11	y	First photometry point reagent OD undershoot	Always checked at the time of analysis
12	@	The photometry OD value has exceeded 2.5	Only available photometry points are checked.
13	$	Fewer than 3 available photometry points	Checked only at the time of RATE, RATE1 items
14	D	MAX OD overshoot	Checked at the time of other than END, END1 items
15	B	MIN OD undershoot	Checked at the time of other than END, END1 items
16	*	Linearity check error	Checked only at the time of RATE, RATE1 items
17	&	Data check error 1 error	Data check is not possible.
18	Z	Data check error 2 error	Excessive reaction
19	!	Calculation impossible	OD value calculation, OD → concentration conversion impossible
20	)	OD → concentration conversion impossible because of different lot No.	

Priority ranking	Symbol	Contents	Remarks
Abnormality marks attached at the concentration value level			
21	a	An expired reagent	
22	b	An expired calibrator	
23	F	Dynamic range overshoot	Concentration value check
24	G	Dynamic range undershoot	Concentration value check
33	X	QC error for the data of multiple pairs	Checked only for QC samples
34	1	QC range overshoot/undershoot	
35	2	Multiple QC check error	
36	3	Multiple QC check error	
37	4	Multiple QC check error	
38	5	Multiple QC check error	
39	6	Multiple QC check error	
40	7	Multiple QC check error	
25	p	Panic value	Checked by the patient sample data
26	T	Inter-item check error	
27	P	Level check overshoot	
28	N	Level check undershoot	
29	H	Higher than the normal value range	
30	L	Lower than the normal value range	
31	J	Repeat run range overshoot	
33	K	Repeat run range undershoot	
Marks indicating the data status			
41	S	Indicates repeat run data	
42	/	Data being analyzed or not yet analyzed	
43	(OD)	Data are OD value.	No mark
44	(C)	Analysis completion data	No mark
45	r	The data have been transmitted to the host.	
2	e	The data have been edited.	Added only to patient sample data
46	c	Manual data correction has been performed.	
1	d	Manual data correction has been performed.	Added only to QC data

■ Sorted by Alarm No.

Alarm No.	Alarm Display To Window Yes/No	Alarm Logging To Disk Yes/No	Alarm Display To Menu Yes/No	Alarm Sound Type 03	Contents
'Preview for Message Covert tool					
0	Yes	Yes	Yes	3	English Sample
'1-1000 Don't use					
'1001-050 Notice Alarm(Same as M520)					
1001	No	Yes	No	0	INITIALIZE
1002	No	Yes	No	0	WARMUP
1003	No	Yes	No	0	STANDBY
1004	No	Yes	No	0	MEASURE START
1005	No	Yes	No	0	NO MORE SAMPLE
1006	No	Yes	No	0	R1 DISPENSE FINISHED
1007	No	Yes	No	0	CUVETTE WASH AFTER MEASUREMENT START
1008	No	Yes	No	0	MEASURE END PROCESS
1009	No	Yes	No	0	MEASURE END
1010	No	Yes	No	0	MOVING TO STOP
1011	No	Yes	No	0	MOVING TO PAUSE
1012	No	Yes	No	0	PAUSE
1013	No	Yes	No	0	STOP
1014	No	Yes	No	0	SYSTEM END PROCESS
1015	No	Yes	No	0	W1 START
1016	No	Yes	No	0	W1 END
1017	No	Yes	No	0	W2 START
1018	No	Yes	No	0	W2 END
1019	No	Yes	No	0	PHOTCAL START
1020	No	Yes	No	0	PHOTCAL END
1021	No	Yes	No	0	ONE-TOUCH MODE ANALYSIS (%s)(Profile No.%d)
1022	Yes	Yes	Yes	2	REMOVE RACK FROM RACK FEEDER
1030	No	Yes	No	0	CHANGE INDEX (%d) (%s)
1031	No	Yes	No	0	ILLEGAL CONSTRUCTION (%s)
'1051-100 Notice Alarm (New as M514)					
1051	No	Yes	No	0	POWER ON
'1101-2000 Notice Alarm(Reserved)					
'2001-2150 Normal Alarm (Same as M520) for Backgroud process					
2001	Yes	Yes	Yes	3	THE SAME SAMPLE ID ALREADY REQUISITIONED (%s)
2002	Yes	Yes	Yes	3	NOT ALLOWED TO DELETE SAMPLE (%s)
2003	Yes	Yes	Yes	3	NOT ALLOWED TO DELETE REPEAT SAMPLE (%s)
2004	Yes	Yes	Yes	3	ALREADY REQUISITIONED REPEAT SAMPLE (%s)
2005	Yes	Yes	Yes	3	ALREADY MEASUREMENT STARTED (%s)
2006	Yes	Yes	Yes	3	PRINTER NOT AVAILABLE
2007	Yes	Yes	Yes	3	Part of data is not output yet
2008	Yes	Yes	Yes	3	Ordering
2085	Yes	Yes	Yes	3	No RB Data (aaaa-b)CNo RB Data (aaaaa-b)
2086	Yes	Yes	Yes	3	No CAL Data (aaaaa-b)
2091	Yes	Yes	Yes	3	R1 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c
2092	Yes	Yes	Yes	3	R2 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c
2093	Yes	Yes	Yes	3	R1 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c
2094	Yes	Yes	Yes	3	R2 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c
2095	Yes	Yes	Yes	3	R1 DIFFERENT LOT NO. (%s)
2096	Yes	Yes	Yes	3	R2 DIFFERENT LOT NO. (%s)

2097	Yes	Yes	Yes	3	No Cleaner in Reagent Refrigerator aaaaa
2101	Yes	Yes	Yes	3	REAGENT ID READ ERROR (%s,%2d)
2102	Yes	Yes	Yes	3	REAGENT ID NOT DEFINED (%s,%2d)
2103	Yes	Yes	Yes	3	R2 REAGENT FOUND IN R1 REF (%2d,%s)
2104	Yes	Yes	Yes	3	R1 REAGENT FOUND IN R2 REF (%2d,%s)
2105	Yes	Yes	Yes	3	ILLEGAL REAGENT POSITION (%s,%2d)
2106	Yes	Yes	Yes	3	ILLEGAL BOTTLE SIZE (%s,%2d)
2111	Yes	Yes	Yes	3	NO REPLY FROM ANL (%2d,%02x)
2121	Yes	Yes	Yes	3	ILLEGAL FLOPPY DISK (%d)
2122	Yes	Yes	Yes	3	NO DATA IN FLOPPY DISK
2123	Yes	Yes	Yes	3	NO AREA IN FLOPPY DISK
2131	Yes	Yes	Yes	3	ONLINE ERROR (%02d) (%s)
2133	Yes	Yes	Yes	3	ONLINE FORMAT ERROR (NO SAMPLE No.)
2134	Yes	Yes	Yes	3	ONLINE FORMAT ERROR (NO SAMPLE ID)
2135	Yes	Yes	Yes	3	ONLINE ILLEGAL TEXT CODE (%s)
2136	Yes	Yes	Yes	3	ONLINE ILLEGAL TEXT BLOCK No. (%s->%s)
2137	Yes	Yes	Yes	3	ONLINE ILLEGAL SAMPLE No. (%s)
2138	Yes	Yes	Yes	3	ONLINE ILLEGAL RACK No. (%s : %s)
2139	Yes	Yes	Yes	3	ONLINE ILLEGAL SAMPLE KIND (%s : %s)
2140	Yes	Yes	Yes	3	ONLINE ILLEGAL GENDER TEXT (%s : %s)
2141	Yes	Yes	Yes	3	ONLINE ILLEGAL AGE/MONTH (%s : %s)
2142	Yes	Yes	Yes	3	ONLINE ANALYSIS METHOD MISMATCH (%s : %s<>%s)
2143	Yes	Yes	Yes	3	ONLINE SAMPLE No. MISMATCH(%s<>%s)
2144	Yes	Yes	Yes	3	ONLINE RACK No. MISMATCH (%s : %s<>%s)
2145	Yes	Yes	Yes	3	ONLINE MISMATCH (%s<>%s)
2146	Yes	Yes	Yes	3	ONLINE TEST ITEM ERROR (%s)
2147	Yes	Yes	Yes	3	ONLINE REPEAT ITEM ERROR (%s)
2148	Yes	Yes	Yes	3	ONLINE FORMAT ERROR (RECEIVE TEXT LENGTH NOT EQUAL)
'2151-3000 Normal Alarm (New as M514) for Backgroud process					
' 2151-2200 Initial Process					
2151	Yes	Yes	Yes	3	DTR SET ERROR
2152	Yes	Yes	Yes	3	DSR CHECK TIMEOUT
' 2201-2250 Analyzer Communication Process					
2201	No	Yes	No	0	ANL Communication Overrun First Time Error (%x,%d,%d)
2202	No	Yes	No	0	ANL Communication Parity First Time Error (%x,%d,%d)
2203	No	Yes	No	0	ANL Communication Framing First Time Error (%x,%d,%d)
2204	No	Yes	No	0	ANL Communication other SIO First Time Error (%x,%d,%d)
2205	No	Yes	No	0	ANL Communication ENQ sent First Time Error (%x,%d,%d)
2206	No	Yes	No	0	ANL Communication NAK Receive First Time Error (%x,%d,%d)
2207	No	Yes	No	0	ANL Communication Timeout First Time Error (%x,%d,%d)
2208	No	Yes	No	0	ANL Communication Not Receive STX First Time Error (%x,%d,%d)
2209	No	Yes	No	0	ANL Communication Receive Text length not equal First Time Error (%x,%d,%d)
2210	No	Yes	No	0	ANL Communication Receive Illegal ETX Location First Time Error (%x,%d,%d)
2211	No	Yes	No	0	ANL Communication BCC First Time Error (%x,%d,%d)
2212	No	Yes	No	0	ANL Communication Text Code First Time Error (%x,%d,%d)
2213	No	Yes	No	0	ANL Communication Text Sending Char Receive First Time Error (%x,%d,%d)
2214	Yes	Yes	Yes	3	ANL Communication Overrun Error (%x,%d,%d)
2215	Yes	Yes	Yes	3	ANL Communication Parity Error (%x,%d,%d)
2216	Yes	Yes	Yes	3	ANL Communication Framing Error (%x,%d,%d)
2217	Yes	Yes	Yes	3	ANL Communication other SIO Error (%x,%d,%d)
2218	Yes	Yes	Yes	3	ANL Communication ENQ send Error (%x,%d,%d)
2219	Yes	Yes	Yes	3	ANL Communication NAK Receive (%x,%d,%d)
2220	Yes	Yes	Yes	3	ANL Communication Timeout Error (%x,%d,%d)
2221	Yes	Yes	Yes	3	ANL Communication Not Receive STX (%x,%d,%d)
2222	Yes	Yes	Yes	3	ANL Communication Receive Text length not equal (%x,%d,%d)

2223	Yes	Yes	Yes	3	ANL Communication Receive Illegal ETX Location (%x,%d,%d)
2224	Yes	Yes	Yes	3	ANL Communication BCC Error (%x,%d,%d)
2225	Yes	Yes	Yes	3	ANL Communication Text Code Error (%x,%d,%d)
2226	Yes	Yes	Yes	3	ANL Communication Text Sending Char Receive Error (%x,%d,%d)
' 2251-2300 Print Process					
2251	Yes	Yes	Yes	3	PRINTER NOT SELECTED
' 2301-2350 Menu ? Process					
2301	Yes	Yes	Yes	3	NO FLOPPY DISK
2302	Yes	Yes	Yes	3	FLOPPY DISK READ/WRITE ERROR
'3001-4000 Normal Alarm for Analyzer					
3103	Yes	Yes	Yes	3	POWER FAILURE DETECTED $T
3104	Yes	Yes	Yes	3	PHOTOMETER CPU INITIAL ERROR $T ($02Bh)
3105	Yes	Yes	Yes	3	COM. CONTROL CPU INITIAL ERROR $T ($02Bh)
3106	Yes	Yes	Yes	3	OPTICAL COM. MASTER INITIAL ERROR $T ($02Bh,$02Bh,$02Bh)
3107	Yes	Yes	Yes	3	OPTICAL COM. SLAVE INITIAL ERROR $T ($y)
3108	Yes	Yes	Yes	3	PHOTOMETER CPU -> ANL COM. ERROR $T ($02Bh,$02Bh,$02Bh,$02Bh)
3109	Yes	Yes	Yes	3	PHOTOMETER CPU -> ANL TEXT NOT RECEIVED $T ($02Bh,$02Bh,$02Bh,$02Bh)
3110	Yes	Yes	Yes	3	ANL -> PHOTOMETER CPU COM. ERROR $T ($02Bh,$02Bh,$02Bh,$02Bh)
3111	Yes	Yes	Yes	3	PHOTOMETER CPU ERROR $T ($02Bh,$y)
3112	Yes	Yes	Yes	3	OPTICAL COM. ERROR $T ($02Bh,$02Bh,$02Bh)
3113	Yes	Yes	Yes	3	OPMC ERROR $T ($y,$u,$u)
3114	Yes	Yes	Yes	3	ANL -> COM. CONTROL CPU I/F ERROR $T ($02Bh)
3115	Yes	Yes	Yes	3	ANL -> BARCODE READER COM. ERROR $T ($y,$02Bh)
3116	Yes	Yes	Yes	3	ANL <- BARCODE READER COM. ERROR $T ($y,$02Bh)
3117	No	Yes	No	0	ANL <- DPR COM. ERROR INFORMATION-1 $T ($02Bh,$02Bh)
3118	Yes	Yes	Yes	3	ANL <- DPR COM. ERROR-1 $T ($02Bh,$02Bh)
3119	Yes	Yes	Yes	3	ANL <- DPR TEXT NOT RECEIVED $T ($02Bh)
3120	No	Yes	No	0	ANL -> DPR COM. ERROR INFORMATION $T ($02Bh,$02Bh)
3121	Yes	Yes	Yes	3	ANL -> DPR COM. ERROR $T ($02Bh,$02Bh)
3122	Yes	Yes	Yes	3	SAMPLE ID READ ERROR $T ($02Bh)
3123	Yes	Yes	Yes	3	STAT SAMPLE ID READ ERROR $T ($02Bh)
3124	Yes	Yes	Yes	3	RACK ID READ ERROR $T ($y,$02Bh)
3127	Yes	Yes	Yes	3	R1 REAGENT ID READ ERROR $T ($02Bh)
3128	Yes	Yes	Yes	3	R2 REAGENT ID READ ERROR $T ($02Bh)
3129	Yes	Yes	Yes	3	ORIGINAL DETERGENT B EMPTY $T
3130	Yes	Yes	Yes	3	ORIGINAL DETERGENT A EMPTY $T
3131	Yes	Yes	Yes	3	DETERGENT B SHORT $T
3132	Yes	Yes	Yes	3	DETERGENT A SHORT $T
3133	Yes	Yes	Yes	3	DI WATER SHORT $T
3134	Yes	Yes	Yes	3	DI WATER EMPTY $T
3135	Yes	Yes	Yes	3	DETERGENT B OVERFLOW $T
3136	Yes	Yes	Yes	3	DETERGENT A OVERFLOW $T
3137	Yes	Yes	Yes	3	DI WATER OVERFLOW $T
3138	Yes	Yes	Yes	3	R1 REAGENT REF. COVER OPEN $T
3139	Yes	Yes	Yes	3	R2 REAGENT REF. COVER OPEN $T
3140	Yes	Yes	Yes	3	INCUBATION. BATH/REAGENT REF. TMP. A/D ERROR $T
3141	Yes	Yes	Yes	3	LAMP OFF $T
3142	Yes	Yes	Yes	3	LAMP DARK $T
3143	Yes	Yes	Yes	3	PHOTOMETER DATA ERROR $T ($y)
3144	Yes	Yes	Yes	3	NO VACUUM PRESSURE $T
3145	Yes	Yes	Yes	3	VACUUM TANK FULL $T
3146	Yes	Yes	Yes	3	RACK DETECTED ON FEEDER BELT $T ($02Bh)
3147	Yes	Yes	Yes	3	RACK DETECTED ON RERUN FEEDER $T ($02Bh)
3149	Yes	Yes	Yes	3	RACK RECEIVER FULL $T
3150	Yes	Yes	Yes	3	NO RACK $T

3151	Yes	Yes	Yes	3	NO STAT CUP $T
3152	Yes	Yes	Yes	3	NO SAMPLE PROBE DETERGENT $T ($y)
3153	Yes	Yes	Yes	3	R1 REAGENT PROBE DETERGENT SHORT $T
3154	Yes	Yes	Yes	3	R2 REAGENT PROBE DETERGENT SHORT $T
3155	Yes	Yes	Yes	3	RACK CLASS ERROR $T
3157	Yes	Yes	Yes	3	SAMPLE INFORMATION UNMATCH $T ($02Bh,$u,$y,$y,$S)
3160	Yes	Yes	Yes	3	ACAL INCOMPLETE $T
3161	Yes	Yes	Yes	3	QC INCOMPLETE $T
3162	Yes	Yes	Yes	3	RB/ACAL SAMPLE PROHIBITED $T
3163	Yes	Yes	Yes	3	AUTOMATIC REPEAT ILLEGAL RACK No. $T ($y,$6c)
3164	Yes	Yes	Yes	3	AUTOMATIC REPEAT RACK OVER $T
3165	Yes	Yes	Yes	3	SAMPLING POSITION, RACK STEP DISABLED $T ($y)
3166	Yes	Yes	Yes	3	RACK SUPPLIER ERROR $T ($y,$u,$u)
3167	Yes	Yes	Yes	3	RACK BUFFER ERROR $T ($y,$u,$u)
3168	Yes	Yes	Yes	3	CUP DETECTION POSITION, RACK STEP UNIT ERROR $T ($y,$u,$u)
3169	Yes	Yes	Yes	3	SAMPLING POSITION, RACK STEP UNIT ERROR $T ($y,$u,$u)
3171	Yes	Yes	Yes	3	SAMPLING POSITION, RACK JAM $T ($y)
3172	Yes	Yes	Yes	3	RACK BUFFER JAM $T
3173	Yes	Yes	Yes	3	RACK RECEIVER JAM $T
3174	Yes	Yes	Yes	3	RACK RECEIVER UNIT ERROR $T ($y,$u,$u)
3175	Yes	Yes	Yes	3	STAT TABLE ERROR $T ($y,$u,$u)
3176	Yes	Yes	Yes	3	SAMPLE PROBE UP/DOWN ERROR $T ($y,$u,$u)
3177	Yes	Yes	Yes	3	SAMPLE PROBE ROTATION ERROR $T ($y,$u,$u)
3178	Yes	Yes	Yes	3	SAMPLE DISPENSER ERROR $T ($y,$u,$u)
3179	Yes	Yes	Yes	3	SAMPLE PROBE LEVEL DETECTOR ERROR ($y)
3180	Yes	Yes	Yes	3	SAMPLE PROBE INTERNAL WASH DISABLED $T ($y,$u,$u)
3181	Yes	Yes	Yes	3	R1 REAGENT PROBE UP/DOWN ERROR $T ($y,$u,$u)
3182	Yes	Yes	Yes	3	R1 REAGENT PROBE ROTATION ERROR $T ($y,$u,$u)
3183	Yes	Yes	Yes	3	R1 REAGENT REF. ROTATION ERROR $T ($y,$u,$u)
3184	Yes	Yes	Yes	3	R1 REAGENT DISPENSER ERROR $T ($y,$u,$u)
3185	Yes	Yes	Yes	3	R1 REAGENT PROBE LEVEL DETECTOR ERROR ($y)
3187	Yes	Yes	Yes	3	R1 REAGENT PROBE INTERNAL WASH DISABLED $T ($y,$u,$u)
3188	Yes	Yes	Yes	3	R2 REAGENT PROBE UP/DOWN ERROR $T ($y,$u,$u)
3189	Yes	Yes	Yes	3	R2 REAGENT PROBE ROTATION ERROR $T ($y,$u,$u)
3190	Yes	Yes	Yes	3	R2 REAGENT REF. ROTATION ERROR $T ($y,$u,$u)
3191	Yes	Yes	Yes	3	R2 REAGENT DISPENSER ERROR $T ($y,$u,$u)
3192	Yes	Yes	Yes	3	R2 REAGENT PROBE LEVEL DETECTOR ERROR ($y)
3194	Yes	Yes	Yes	3	R2 REAGENT PROBE INTERNAL WASH DISABLED $T ($y,$u,$u)
3195	Yes	Yes	Yes	3	S/R1-MIX UP/DOWN ERROR $T ($y,$u,$u)
3196	Yes	Yes	Yes	3	S/R1-MIX ROTATION ERROR $T ($y,$u,$u)
3197	Yes	Yes	Yes	3	S/R1-MIXING ERROR $T
3198	Yes	Yes	Yes	3	R2-MIX UP/DOWN ERROR $T ($y,$u,$u)
3199	Yes	Yes	Yes	3	R2-MIX ROTATION ERROR $T ($y,$u,$u)
3200	Yes	Yes	Yes	3	R2-MIXING ERROR $T
3201	Yes	Yes	Yes	3	CUVETTE WASH UNIT ERROR $T ($y,$u,$u)
3202	Yes	Yes	Yes	3	CUVETTE WASH DISABLED $T ($y,$u,$u)
3203	Yes	Yes	Yes	3	CUVETTE WHEEL ROTATION ERROR $T ($y,$u,$u)
3204	Yes	Yes	Yes	3	PHOTOMETER ERROR $T ($y)
3205	Yes	Yes	Yes	3	PROBE WASHING DISPENSER ERROR $T ($y,$u,$u)
3206	Yes	Yes	Yes	3	LBF RACK EXIST $T
3207	No	Yes	No	0	ANL PRGERR 1 $T ($ccccccccc,$u)
3208	No	Yes	No	0	ANL PROGRAM ERROR 2 $T ($y)
3209	No	Yes	No	0	ANL PROGRAM ERROR 3 $T ($y,$y)
3210	No	Yes	No	0	ANL PROGRAM ERROR 4 $T ($y,$S,$y)
3212	Yes	Yes	Yes	3	STRONG DRAIN TANK FULL $T
3213	Yes	Yes	Yes	3	WEAK DRAIN TANK FULL $T

3214	Yes	Yes	Yes	3	R1 REAGENT SHORT $T ($I,$y)
3215	Yes	Yes	Yes	3	R2 REAGENT SHORT $T ($I,$y)
3216	Yes	Yes	Yes	3	R1 REAGENT EMPTY $T ($S,$I,$y,$y)
3217	Yes	Yes	Yes	3	R2 REAGENT EMPTY $T ($S,$I,$y,$y)
3218	Yes	Yes	Yes	3	INCUBATION BATH TEMP. ERROR $T
3220	Yes	Yes	Yes	3	SAMPLE EMPTY LEVEL DETECT $T ($S,$I,$y)
3222	Yes	Yes	Yes	3	AUTOMATIC REPEAT BELT FEEDER JAM $T
3226	No	Yes	No	0	ANL DEBUG INFORMATION 1 $T ($y,$y,$04X:$04X,$08Z)
3227	No	Yes	No	0	ANL DEBUG INFORMATION 2 $T ($y,$y,$y,$y,$y,$y,$y,$y)
3228	No	Yes	No	0	ANL DEBUG INFORMATION 3 $T ($y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y)
3229	No	Yes	No	0	ANL DEBUG INFORMATION 4 $T ($y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y)
3230	No	Yes	No	0	ANL DEBUG INFORMATION 5 $T ($y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y)
3232	Yes	Yes	Yes	3	AUTOMATIC REPEAT RECEIVER JAM $T
3237	Yes	Yes	Yes	3	CLOT SENSOR ERROR $T ($y)
3238	Yes	Yes	Yes	3	CLOT SAMPLE DETECT $T ($S,$I)
3251	No	Yes	No	0	ANL <- DPR COM. ERROR INFORMATION-2 $T ($02Bh,$02Bh)
3252	Yes	Yes	Yes	3	ANL <- DPR COM. ERROR-2 $T ($02Bh,$02Bh)
3253	Yes	Yes	Yes	3	DETERGENT A EMPTY $T
3254	Yes	Yes	Yes	3	DETERGENT B EMPTY $T
3255	Yes	Yes	Yes	3	ISE COVER OPEN $T
3256	Yes	Yes	Yes	3	STAT COVER OPEN $T
3257	Yes	Yes	Yes	3	STAT SET OVER TIME
3258	Yes	Yes	Yes	3	AUTO REPEAT RUN RACK DISABLED $T
3259	Yes	Yes	Yes	3	MIRROR ROTATION ERROR $T ($y,$u,$u)
3260	Yes	Yes	Yes	3	R2 REAGENT EMPTY $T ($S,$I,$y)
3261	Yes	Yes	Yes	3	PRE DILUTION WATER SHORT $T
3262	Yes	Yes	Yes	3	PRE DILUTION WATER EMPTY LEVEL DETECT $T ($S,$I,$y)
3263	No	Yes	No	3	CUVETTE WATER EMPTY $T ($y)
3264	No	Yes	No	3	REAGENT TRANSPOSITION DISABLED $T ($I)
3265	No	Yes	No	3	RB/ACAL/QC REAGENT INF. UNMATCH $T
3266	Yes	Yes	Yes	3	QC SAMPLE PROHIBITED $T
3267	Yes	Yes	Yes	3	MEASURE RESTART DISABLE
3268	Yes	Yes	Yes	3	R1 REG. PROBE DETERGENT SHORT (CLN-$y,$y)
3269	Yes	Yes	Yes	3	R1 REG. PROBE DETERGENT EMPTY (CLN-$y,$y)
3270	Yes	Yes	Yes	3	R2 REG. PROBE DETERGENT SHORT (CLN-$y,$y)
3271	Yes	Yes	Yes	3	R2 REG. PROBE DETERGENT EMPTY (CLN-$y,$y)
3272	Yes	Yes	Yes	3	RACK BUFFER UNIT ERROR $T ($y,$u,$u)
3273	Yes	Yes	Yes	3	RACK BUFFER STOPPER ERROR $T ($y,$u,$u)
3274	Yes	Yes	Yes	3	RACK BUFFER COVER OPEN $T
3275	Yes	Yes	Yes	3	R1 REAGENT EMPTY T (aaaaa,bb,cc)
3276	Yes	Yes	Yes	3	LBF RACK FEED DISABLE (aa,bb,cc,dd)
3301	Yes	Yes	Yes	3	NO ISE $T
3302	Yes	Yes	Yes	3	ISE INITIAL ERROR $T ($02Bh)
3303	Yes	Yes	Yes	3	ISE MID STANDARD SHORT $T
3304	Yes	Yes	Yes	3	ISE BUFFER SHORT $T
3305	Yes	Yes	Yes	3	ISE REFERENCE SHORT $T
3306	Yes	Yes	Yes	3	ISE CLEANING SOLUTION SHORT $T
3307	Yes	Yes	Yes	3	ISE STANDARD L SHORT $T
3308	Yes	Yes	Yes	3	ISE STANDARD H SHORT $T
3309	Yes	Yes	Yes	3	ISE SELECTIVITY CHECK(Na) SHORT $T
3310	Yes	Yes	Yes	3	ISE SELECTIVITY CHECK(K) SHORT $T
3311	Yes	Yes	Yes	3	ISE LOW DATA $T
3313	Yes	Yes	Yes	3	ISE SAMPLE No. ILLEGAL PROCEDURE $T ($S)
3314	Yes	Yes	Yes	3	ANL <- ISE COM. ERROR $T ($02Bh,$02Bh)
3315	Yes	Yes	Yes	3	ANL <- ISE TEXT NOT RECEIVED $T ($02Bh,$02Bh)
3316	Yes	Yes	Yes	3	ANL -> ISE COM. RECEPTION ERROR $T ($02Bh,$02Bh)

3351	Yes	Yes	Yes	3	ISE <- ANL COM. ERROR $T ($02Bh,$02Bh)
3352	Yes	Yes	Yes	3	ISE <- ANL TEXT NOT RECEIVED $T ($02Bh,$02Bh)
3353	Yes	Yes	Yes	3	ISE SEQUENCE ERROR $T
3354	Yes	Yes	Yes	3	ISE SYNC SIGNAL ERROR $T ($02Bh,$y,$u,$u,$u,$02Bh,$y)
3355	Yes	Yes	Yes	3	ISE A/D ERROR $T ($y)
3356	Yes	Yes	Yes	3	ISE TEMP. ERROR $T ($y)
3357	Yes	Yes	Yes	3	ISE BUFFER DISPENSER ERROR $T ($y)
3358	Yes	Yes	Yes	3	ISE MID STANDARD PUMP ERROR $T ($y)
3359	Yes	Yes	Yes	3	ISE SAMPLE ASPIRATION PUMP ERROR $T ($y)
3360	Yes	Yes	Yes	3	ISE SAMPLE MIXER ERROR $T ($y)
3361	Yes	Yes	Yes	3	ISE D-POT OVERFLOW SENSOR ERROR $T ($y)
3362	Yes	Yes	Yes	3	ISE -> ANL COM. RECEPTION ERROR $T ($02Bh,$02Bh)
'4001-4100 Normal Alarm (Same as M520) for Backgroud process					
4001	Yes	Yes	Yes	3	NO SAMPLE CUP (%s-%s)
4002	Yes	Yes	Yes	3	SAMPLE NOP (%s-%s)
4003	Yes	Yes	Yes	3	SAMPLE ID NOT FOUND (%s-%s)
4004	Yes	Yes	Yes	3	REPEAT SAMPLE ID NOT FOUND (%s-%s)
4005	Yes	Yes	Yes	3	REPEAT SAMPLE NOP (%s-%s)
4006	Yes	Yes	Yes	3	ILLEGAL SAMPLE ID (%s-%s)
4007	Yes	Yes	Yes	3	ENCODED ID ERROR (%s-%s)
4008	Yes	Yes	Yes	3	BROKEN LABEL (%s-%s)
4009	Yes	Yes	Yes	3	REPEAT BROKEN LABEL (%s-%s)
4010	Yes	Yes	Yes	3	SAMPLE ID READ ERROR (%s-%s)
4011	Yes	Yes	Yes	3	REPEAT SAMPLE ID READ ERROR (%s-%s)
4012	Yes	Yes	Yes	3	MEASURE COMPLETED FOR THE READ SAMPLE ID (%s-%s)
4013	Yes	Yes	Yes	3	CALIBRATION FACTOR RANGE OVER (%s) %c
4014	Yes	Yes	Yes	3	CALIBRATION FACTOR RANGE UNDER (%s) %c
4015	Yes	Yes	Yes	3	CALIBRATION OD RANGE OVER (%s) %c %d
4016	Yes	Yes	Yes	3	CALIBRATION OD RANGE UNDER (%s) %c %d
4017	Yes	Yes	Yes	3	CALIBRATION ERROR (%s) %c
4018	Yes	Yes	Yes	3	QC DATA RANGE OVER (%s %02d %s %c)
4019	Yes	Yes	Yes	3	QC DATA RANGE UNDER (%s %02d %s %c)
4020	Yes	Yes	Yes	3	QC DATA CHECK ERROR (%s %s %c %d)
4021	Yes	Yes	Yes	3	PANIC VALUE (%s-%s-%02d-%s)
4022	Yes	Yes	Yes	3	0% DATA ERROR
4023	Yes	Yes	Yes	3	PHOTCAL DATA ERROR
4024	Yes	Yes	Yes	3	REAGENT REF. TEMPERATURE LOW
4025	Yes	Yes	Yes	3	REAGENT REF. TEMPERATURE HIGH
4026	Yes	Yes	Yes	3	INCUBATION BATH TEMPERATURE HIGH
4027	Yes	Yes	Yes	3	INCUBATION BATH TEMPERATURE LOW
4028	Yes	Yes	Yes	3	STAT SAMPLE MEASURE START CANCELED
4029	Yes	Yes	Yes	3	DPR <-> ANL COM. START TIMEOUT
4030	Yes	Yes	Yes	3	DPR <-> ANL COM. TIMEOUT (%02x)
4031	Yes	Yes	Yes	3	ILLEGAL PARAMETER (%s %d %d %d %d)
4032	Yes	Yes	Yes	3	ROUTINE EMERGENCY REPEAT STAT DATA BASE ERROR (%3d) (%16s)
4033	Yes	Yes	Yes	3	QC DATA BASE ERROR (%3d) (%16s)
4034	Yes	Yes	Yes	3	REACTION DATA BASE ERROR (%3d) (%16s)
4035	Yes	Yes	Yes	3	NO SAMPLE REQUISITION (%6s)
4036	Yes	Yes	Yes	3	DATA WRITE DISABLED (%6s)
4037	Yes	Yes	Yes	3	DATA BASE ERROR (%3d) (%s)
4038	Yes	Yes	Yes	3	STAT TABLE TEMPERATURE HIGH
4039	Yes	Yes	Yes	3	STAT TABLE TEMPERATURE LOW
4051	Yes	Yes	Yes	3	REPEAT SAMPLE NO CUP (%s %s-%02d)
4052	Yes	Yes	Yes	3	ILLEGAL REPEAT SAMPLE ID (%s)
4053	Yes	Yes	Yes	3	MAXIMUM NUMBER OF SAMPLE (%s)
4054	No	Yes	No	0	ANL PROGRAM DOWNLOAD COMPLETED
4055					Can't calculate Sample No. of this Rack No. (aaaaa-bb)
4057					NO TESTS REQUISITIONED (aaaaa-bbbbb-cc) ddddddddd

'4101-9000 Normal Alarm (Reserved)					
4101	Yes	Yes	Yes	3	NO STAT CUP (CALIBRATOR NO.:%d)
4102	Yes	Yes	Yes	3	NO STAT CUP (CONTROL NO.:%d)
4103	Yes	Yes	Yes	3	STAT CAL./QC DUPLICATE ID (%s) %d
4104	Yes	Yes	Yes	3	STAT CAL./QC ID READ ERROR (%d)
4106					INVALID STAT CUP (CALIBRATION NO. aa)
'9001-9400 Normal Alarm (Same sa M520) for System common.					
9001	No	Yes	No	0	LOGIN [%s]
9002	No	Yes	No	0	LOGOUT [%s]
9003	No	Yes	No	0	TEMPORARY LOGIN [%s]
9004	No	Yes	No	0	MENU [%s]
9005	No	Yes	No	0	MENU [%s] EXIT
9141	Yes	Yes	Yes	3	Hard Copy Error
9143	Yes	Yes	Yes	3	PRINTER BUSY
9173	Yes	Yes	Yes	3	SECONDARY PRINTER BUSY
9174	Yes	Yes	Yes	3	PRINTOUT ERROR
9176	Yes	Yes	Yes	3	SECONDARY PRINTER PRINTOUT ERROR
9231	No	Yes	No	0	PASSWORD ERROR [%s]
9232	No	Yes	No	0	NEW PASSWORD IS NOT IDENTICAL WITH CONFIRMATION PASSWORD
9291	No	Yes	No	0	Database Inf [%s]
9292	No	Yes	No	0	Database Error [%s]
'9401-9999 Normal Alarm (New sa M514) for System common.					
' 9401-9470 sApiAlarmDisplay() Function					
9401	Yes	Yes	Yes	3	Access is denied
9402	Yes	Yes	Yes	3	This account is currently disabled and cannot be logged on to
9403	Yes	Yes	Yes	3	The user's account has expired
9404	Yes	Yes	Yes	3	Some user account restriction has prevented successful authentication
9405	Yes	Yes	Yes	3	Attempt to create file that already exists
9406	Yes	Yes	Yes	3	The system is currently running with the last-known-good configuration
9407	Yes	Yes	Yes	3	The storage control blocks were destroyed
9408	Yes	Yes	Yes	3	The specified user name is invalid
9409	Yes	Yes	Yes	3	The configuration registry database is damaged
9410	Yes	Yes	Yes	3	The configuration registry key is invalid
9411	Yes	Yes	Yes	3	The requested resource is in use
9412	Yes	Yes	Yes	3	Cannot complete function for some reason
9413	Yes	Yes	Yes	3	The directory or file cannot be created
9414	Yes	Yes	Yes	3	The configuration registry key cannot be opened
9415	Yes	Yes	Yes	3	The configuration registry key cannot be read
9416	Yes	Yes	Yes	3	The configuration registry key cannot be written
9417	Yes	Yes	Yes	3	An attempt was made to create a stable subkey under a volatile parent key
9418	Yes	Yes	Yes	3	Data error
9419	Yes	Yes	Yes	3	The database specified does not exist
9420	Yes	Yes	Yes	3	The directory is not empty
9421	Yes	Yes	Yes	3	The directory name is invalid
9422	Yes	Yes	Yes	3	The disk structure is damaged and nonreadable
9423	Yes	Yes	Yes	3	There is not enough space on the disk
9424	Yes	Yes	Yes	3	While accessing the hard disk, a disk operation failed
9425	Yes	Yes	Yes	3	While accessing the hard disk, a recalibrate operation failed
9426	Yes	Yes	Yes	3	A hard disk controller reset was needed, but even that failed
9427	Yes	Yes	Yes	3	An extended error has occurred
9428	Yes	Yes	Yes	3	The file or directory is damaged and nonreadable
9429	Yes	Yes	Yes	3	The system cannot find the file specified
9430	Yes	Yes	Yes	3	The file name or extension is too long
9431	Yes	Yes	Yes	3	The disk is full
9432	Yes	Yes	Yes	3	Reached End Of File

9433	Yes	Yes	Yes	3	This operation cannot be completed due to on-disk data structure corruption
9434	Yes	Yes	Yes	3	The system cannot find the specified drive
9435	Yes	Yes	Yes	3	The flag passed is incorrect
9436	Yes	Yes	Yes	3	The flags are invalid
9437	Yes	Yes	Yes	3	The user account has time restrictions and cannot be logged onto at now
9438	Yes	Yes	Yes	3	The parameter is incorrect
9439	Yes	Yes	Yes	3	The specified network password is incorrect
9440	Yes	Yes	Yes	3	The format of the specified password is invalid
9441	Yes	Yes	Yes	3	The printer command is invalid
9442	Yes	Yes	Yes	3	The printer name is invalid
9443	Yes	Yes	Yes	3	The user account is restricted and cannot be used to log on
9444	Yes	Yes	Yes	3	The attempted logon is invalid
9445	Yes	Yes	Yes	3	The global filename characters * or ? are entered incorrectly
9446	Yes	Yes	Yes	3	An attempt was made to move the file pointer before the beginning of the file
9447	Yes	Yes	Yes	3	System could not allocate required space in a registry log
9448	Yes	Yes	Yes	3	The drive is not ready
9449	Yes	Yes	Yes	3	The system cannot open the specified device or file
9450	Yes	Yes	Yes	3	The I/O operation was aborted due to either thread exit or application request
9451	Yes	Yes	Yes	3	The printer is out of paper
9452	Yes	Yes	Yes	3	File waiting to be printed was deleted
9453	Yes	Yes	Yes	3	The printer queue is full
9454	Yes	Yes	Yes	3	The registry is damaged
9455	Yes	Yes	Yes	3	The registry initiated an I/O operation that had an unrecoverable failure
9456	Yes	Yes	Yes	3	The drive cannot locate a specific area on the disk
9457	Yes	Yes	Yes	3	The file pointer cannot be set on the specified device or file
9458	Yes	Yes	Yes	3	Insert the disk for drive 1
9459	Yes	Yes	Yes	3	The credentials supplied conflict with an existing set of credentials
9460	Yes	Yes	Yes	3	The process cannot access the file because it is being used by another
9461	Yes	Yes	Yes	3	The system cannot open the file
9462	Yes	Yes	Yes	3	The disk media is not recognized. It may not be formatted
9463	Yes	Yes	Yes	3	The media is write protected
' 9471-9490 s File Alarm Display() Function					
9471	Yes	Yes	Yes	3	File genric Error [%s]
9472	Yes	Yes	Yes	3	File not found [%s]
9473	Yes	Yes	Yes	3	Bad pathname [%s]
9474	Yes	Yes	Yes	3	Too many open files [%s]
9475	Yes	Yes	Yes	3	File access denied [%s]
9476	Yes	Yes	Yes	3	Invalid File handle [%s]
9477	Yes	Yes	Yes	3	Can't remove current directory [%s]
9478	Yes	Yes	Yes	3	Full directory [%s]
9479	Yes	Yes	Yes	3	Bad seek pointer [%s]
9480	Yes	Yes	Yes	3	File Hardware I/O Error [%s]
9481	Yes	Yes	Yes	3	File sharing violation [%s]
9482	Yes	Yes	Yes	3	File lock violation [%s]
9483	Yes	Yes	Yes	3	File disk full [%s]
9484	Yes	Yes	Yes	3	File end of file [%s]
' 9491-9500 DPRERR Function					
9491	No	Yes	No	0	SYSERR %03d , %04d
9492	No	Yes	No	0	DPRERR %d , %s , %s
9493	No	Yes	No	0	DPRINF %d , %s , %s
'Analyzer communication process					

■ Sorted by Alarm description

Alarm No.	Contents
4022	0% DATA ERROR
9426	A hard disk controller reset was needed, but even that failed
3160	ACAL INCOMPLETE $T
9401	Access is denied
2005	ALREADY MEASUREMENT STARTED (%s)
2004	ALREADY REQUISITIONED REPEAT SAMPLE (%s)
9417	An attempt was made to create a stable subkey under a volatile parent key
9446	An attempt was made to move the file pointer before the beginning of the file
9427	An extended error has occurred
3115	ANL -> BARCODE READER COM. ERROR $T ($y,$02Bh)
3114	ANL -> COM. CONTROL CPU I/F ERROR $T ($02Bh)
3121	ANL -> DPR COM. ERROR $T ($02Bh,$02Bh)
3120	ANL -> DPR COM. ERROR INFORMATION $T ($02Bh,$02Bh)
3316	ANL -> ISE COM. RECEPTION ERROR $T ($02Bh,$02Bh)
3110	ANL -> PHOTOMETER CPU COM. ERROR $T ($02Bh,$02Bh,$02Bh,$02Bh)
3116	ANL <- BARCODE READER COM. ERROR $T ($y,$02Bh)
3117	ANL <- DPR COM. ERROR INFORMATION-1 $T ($02Bh,$02Bh)
3251	ANL <- DPR COM. ERROR INFORMATION-2 $T ($02Bh,$02Bh)
3118	ANL <- DPR COM. ERROR-1 $T ($02Bh,$02Bh)
3252	ANL <- DPR COM. ERROR-2 $T ($02Bh,$02Bh)
3119	ANL <- DPR TEXT NOT RECEIVED $T ($02Bh)
3314	ANL <- ISE COM. ERROR $T ($02Bh,$02Bh)
3315	ANL <- ISE TEXT NOT RECEIVED $T ($02Bh,$02Bh)
2224	ANL Communication BCC Error (%x,%d,%d)
2211	ANL Communication BCC First Time Error (%x,%d,%d)
2218	ANL Communication ENQ send Error (%x,%d,%d)
2205	ANL Communication ENQ sended First Time Error (%x,%d,%d)
2203	ANL Communication Framing First Time Error (%x,%d,%d)
2216	ANL Communication Framing Error (%x,%d,%d)
2219	ANL Communication NAK Receive (%x,%d,%d)
2206	ANL Communication NAK Receive First Time Error (%x,%d,%d)
2221	ANL Communication Not Receive STX (%x,%d,%d)
2208	ANL Communication Not Receive STX First Time Error (%x,%d,%d)
2217	ANL Communication other SIO Error (%x,%d,%d)
2204	ANL Communication other SIO First Time Error (%x,%d,%d)
2214	ANL Communication Overrun Error (%x,%d,%d)
2201	ANL Communication Overrun First Time Error (%x,%d,%d)
2215	ANL Communication Parity Error (%x,%d,%d)
2202	ANL Communication Parity First Time Error (%x,%d,%d)
2223	ANL Communication Receive Illegal ETX Location (%x,%d,%d)
2210	ANL Communication Receive Illegal ETX Location First Time Error (%x,%d,%d)
2222	ANL Communication Receive Text length not equal (%x,%d,%d)
2209	ANL Communication Receive Text length not equal First Time Error (%x,%d,%d)
2225	ANL Communication Text Code Error (%x,%d,%d)
2212	ANL Communication Text Code First Time Error (%x,%d,%d)
2226	ANL Communication Text Sending Char Receive Error (%x,%d,%d)
2213	ANL Communication Text Sending Char Receive First Time Error (%x,%d,%d)
2220	ANL Communication Timeout Error (%x,%d,%d)
2207	ANL Communication Timeout First Time Error (%x,%d,%d)
3226	ANL DEBUG INFORMATION 1 $T ($y,$y,$04X:$04X,$08Z)
3227	ANL DEBUG INFORMATION 2 $T ($y,$y,$y,$y,$y,$y,$y,$y)

3228	ANL DEBUG INFORMATION 3 $T ($y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y)
3229	ANL DEBUG INFORMATION 4 $T ($y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y)
3230	ANL DEBUG INFORMATION 5 $T ($y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y,$y)
3207	ANL PRGERR 1 $T ($ccccccccc,$u)
4054	ANL PROGRAM DOWNLOAD COMPLETED
3208	ANL PROGRAM ERROR 2 $T ($y)
3209	ANL PROGRAM ERROR 3 $T ($y,$y)
3210	ANL PROGRAM ERROR 4 $T ($y,$S,$y)
9405	Attempt to create file that already exists
3258	AUTO REPEAT RUN RACK DISABLED $T
3222	AUTOMATIC REPEAT BELT FEEDER JAM $T
3163	AUTOMATIC REPEAT ILLEGAL RACK No. $T ($y,$6c)
3164	AUTOMATIC REPEAT RACK OVER $T
3232	AUTOMATIC REPEAT RECEIVER JAM $T
9473	Bad pathname [%s]
9479	Bad seek pointer [%s]
4008	BROKEN LABEL (%s-%s)
4017	CALIBRATION ERROR (%s) %c
4013	CALIBRATION FACTOR RANGE OVER (%s) %c
4014	CALIBRATION FACTOR RANGE UNDER (%s) %c
4015	CALIBRATION OD RANGE OVER (%s) %c %d
4016	CALIBRATION OD RANGE UNDER (%s) %c %d
9477	Can't remove current directory [%s]
9412	Cannot complete function for some reason
1030	CHANGE INDEX (%d) (%s)
3238	CLOT SAMPLE DETECT $T ($S,$I)
3237	CLOT SENSOR ERROR $T ($y)
3105	COM. CONTROL CPU INITIAL ERROR $T ($02Bh)
3168	CUP DETECTION POSITION, RACK STEP UNIT ERROR $T ($y,$u,$u)
1007	CUVETTE WASH AFTER MEASUREMENT START
3202	CUVETTE WASH DISABLED $T ($y,$u,$u)
3201	CUVETTE WASH UNIT ERROR $T ($y,$u,$u)
3263	CUVETTE WATER EMPTY $T ($y)
3203	CUVETTE WHEEL ROTATION ERROR $T ($y,$u,$u)
4055	Can't calculate Sample No. of this Rack No. (aaaaa-bb)
4037	DATA BASE ERROR (%3d) (%s)
9418	Data error
4036	DATA WRITE DISABLED (%6s)
9292	Database Error [%s]
9291	Database Inf [%s]
3253	DETERGENT A EMPTY $T
3136	DETERGENT A OVERFLOW $T
3132	DETERGENT A SHORT $T
3254	DETERGENT B EMPTY $T
3135	DETERGENT B OVERFLOW $T
3131	DETERGENT B SHORT $T
3134	DI WATER EMPTY $T
3137	DI WATER OVERFLOW $T
3133	DI WATER SHORT $T
4029	DPR <-> ANL COM. START TIMEOUT
4030	DPR <-> ANL COM. TIMEOUT (%02x)
9492	DPRERR %d , %s , %s
9493	DPRINF %d , %s , %s
2152	DSR CHECK TIMEOUT
2151	DTR SET ERROR
4007	ENCODED ID ERROR (%s-%s)
9475	File access denied [%s]
9483	File disk full [%s]
9484	File end of file [%s]

9471	File genric Error [%s]
9480	File Hardware I/O Error [%s]
9482	File lock violation [%s]
9472	File not found [%s]
9481	File sharing violation [%s]
9452	File waiting to be printed was deleted
2302	FLOPPY DISK READ/WRITE ERROR
9478	Full directory [%s]
9141	Hard Copy Error
2106	ILLEGAL BOTTLE SIZE (%s,%2d)
1031	ILLEGAL CONSTRUCTION (%s)
2121	ILLEGAL FLOPPY DISK (%d)
4031	ILLEGAL PARAMETER (%s %d %d %d %d)
2105	ILLEGAL REAGENT POSITION (%s,%2d)
4052	ILLEGAL REPEAT SAMPLE ID (%s)
4006	ILLEGAL SAMPLE ID (%s-%s)
3218	INCUBATION BATH TEMP. ERROR $T
4026	INCUBATION BATH TEMPERATURE HIGH
4027	INCUBATION BATH TEMPERATURE LOW
3140	INCUBATION. BATH/REAGENT REF. TMP. A/D ERROR $T
1001	INITIALIZE
9458	Insert the disk for drive 1
9476	Invalid File handle [%s]
3362	ISE -> ANL COM. RECEPTION ERROR $T ($02Bh,$02Bh)
3351	ISE <- ANL COM. ERROR $T ($02Bh,$02Bh)
3352	ISE <- ANL TEXT NOT RECEIVED $T ($02Bh,$02Bh)
3355	ISE A/D ERROR $T ($y)
3357	ISE BUFFER DISPENSER ERROR $T ($y)
3304	ISE BUFFER SHORT $T
3306	ISE CLEANING SOLUTION SHORT $T
3255	ISE COVER OPEN $T
3361	ISE D-POT OVERFLOW SENSOR ERROR $T ($y)
3302	ISE INITIAL ERROR $T ($02Bh)
3311	ISE LOW DATA $T
3358	ISE MID STANDARD PUMP ERROR $T ($y)
3303	ISE MID STANDARD SHORT $T
3305	ISE REFERENCE SHORT $T
3359	ISE SAMPLE ASPIRATION PUMP ERROR $T ($y)
3360	ISE SAMPLE MIXER ERROR $T ($y)
3313	ISE SAMPLE No. ILLEGAL PROCEDURE $T ($S)
3310	ISE SELECTIVITY CHECK(K) SHORT $T
3309	ISE SELECTIVITY CHECK(Na) SHORT $T
3353	ISE SEQUENCE ERROR $T
3308	ISE STANDARD H SHORT $T
3307	ISE STANDARD L SHORT $T
3354	ISE SYNC SIGNAL ERROR $T ($02Bh,$y,$u,$u,$u,$02Bh,$y)
3356	ISE TEMP. ERROR $T ($y)
4106	INVALID STAT CUP (CALIBRATION NO. aa)
3142	LAMP DARK $T
3141	LAMP OFF $T
3206	LBF RACK EXIST $T
3276	LBF RACK FEED DISABLE (aa,bb,cc,dd)
9001	LOGIN [%s]
9002	LOGOUT [%s]
4053	MAXIMUM NUMBER OF SAMPLE (%s)
4012	MEASURE COMPLETED FOR THE READ SAMPLE ID (%s-%s)
1009	MEASURE END
1008	MEASURE END PROCESS
3267	MEASURE RESTART DISABLE

1004	MEASURE START
9004	MENU [%s]
9005	MENU [%s] EXIT
3259	MIRROR ROTATION ERROR $T ($y,$u,$u)
1011	MOVING TO PAUSE
1010	MOVING TO STOP
9232	NEW PASSWORD IS NOT IDENTICAL WITH CONFIRMATION PASSWORD
2123	NO AREA IN FLOPPY DISK
2122	NO DATA IN FLOPPY DISK
2301	NO FLOPPY DISK
3301	NO ISE $T
1005	NO MORE SAMPLE
3150	NO RACK $T
2111	NO REPLY FROM ANL (%2d,%02x)
4001	NO SAMPLE CUP (%s-%s)
3152	NO SAMPLE PROBE DETERGENT $T ($y)
4035	NO SAMPLE REQUISITION (%6s)
4101	NO STAT CUP (CALIBRATOR NO.:%d)
4102	NO STAT CUP (CONTROL NO.:%d)
3151	NO STAT CUP $T
3144	NO VACUUM PRESSURE $T
2003	NOT ALLOWED TO DELETE REPEAT SAMPLE (%s)
2002	NOT ALLOWED TO DELETE SAMPLE (%s)
2085	No RB Data (aaaa-b)CNo RB Data (aaaaa-b)
2086	No CAL Data (aaaaa-b)
2097	No Cleaner in Reagent Refrigerator aaaaa
4057	NO TESTS REQUISITIONED (aaaaa-bbbbb-cc) ddddddddd
1021	ONE-TOUCH MODE ANALYSIS (%s)(Profile No.%d)
2142	ONLINE ANALYSIS METHOD MISMATCH (%s : %s<>%s)
2131	ONLINE ERROR (%02d) (%s)
2134	ONLINE FORMAT ERROR (NO SAMPLE ID)
2133	ONLINE FORMAT ERROR (NO SAMPLE No.)
2141	ONLINE ILLEGAL AGE/MONTH (%s : %s)
2140	ONLINE ILLEGAL GENDER TEXT (%s : %s)
2138	ONLINE ILLEGAL RACK No. (%s : %s)
2139	ONLINE ILLEGAL SAMPLE KIND (%s : %s)
2137	ONLINE ILLEGAL SAMPLE No. (%s)
2136	ONLINE ILLEGAL TEXT BLOCK No. (%s->%s)
2135	ONLINE ILLEGAL TEXT CODE (%s)
2145	ONLINE MISMATCH (%s<>%s)
2144	ONLINE RACK No. MISMATCH (%s : %s<>%s)
2147	ONLINE REPEAT ITEM ERROR (%s)
2148	ONLINE FORMAT ERROR (RECEIVE TEXT LENGTH NOT EQUAL)
2143	ONLINE SAMPLE No. MISMATCH(%s<>%s)
2146	ONLINE TEST ITEM ERROR (%s)
3113	OPMC ERROR $T ($y,$u,$u)
3112	OPTICAL COM. ERROR $T ($02Bh,$02Bh,$02Bh)
3106	OPTICAL COM. MASTER INITIAL ERROR $T ($02Bh,$02Bh,$02Bh)
3107	OPTICAL COM. SLAVE INITIAL ERROR $T ($y)
2008	Ordering
3130	ORIGINAL DETERGENT A EMPTY $T
3129	ORIGINAL DETERGENT B EMPTY $T
4021	PANIC VALUE (%s-%s-%02d-%s)
2007	Part of data is not output yet
9231	PASSWORD ERROR [%s]
1012	PAUSE
4023	PHOTCAL DATA ERROR
1020	PHOTCAL END
1019	PHOTCAL START

3108	PHOTOMETER CPU -> ANL COM. ERROR $T ($02Bh,$02Bh,$02Bh,$02Bh)
3109	PHOTOMETER CPU -> ANL TEXT NOT RECEIVED $T ($02Bh,$02Bh,$02Bh,$02Bh)
3111	PHOTOMETER CPU ERROR $T ($02Bh,$y)
3104	PHOTOMETER CPU INITIAL ERROR $T ($02Bh)
3143	PHOTOMETER DATA ERROR $T ($y)
3204	PHOTOMETER ERROR $T ($y)
3103	POWER FAILURE DETECTED $T
1051	POWER ON
3262	PRE DILUTION WATER EMPTY LEVEL DETECT $T ($S,$I,$y)
3261	PRE DILUTION WATER SHORT $T
9143	PRINTER BUSY
2006	PRINTER NOT AVAILABLE
2251	PRINTER NOT SELECTED
9174	PRINTOUT ERROR
3205	PROBE WASHING DISPENSER ERROR $T ($y,$u,$u)
4033	QC DATA BASE ERROR (%3d) (%16s)
4020	QC DATA CHECK ERROR (%s %s %c %d)
4018	QC DATA RANGE OVER (%s %02d %s %c)
4019	QC DATA RANGE UNDER (%s %02d %s %c)
3161	QC INCOMPLETE $T
3266	QC SAMPLE PROHIBITED $T
2095	R1 DIFFERENT LOT NO. (%s)
1006	R1 DISPENSE FINISHED
2093	R1 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c
2091	R1 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c
3184	R1 REAGENT DISPENSER ERROR $T ($y,$u,$u)
3216	R1 REAGENT EMPTY $T ($S,$I,$y,$y)
3275	R1 REAGENT EMPTY T (aaaaa,bb,cc)
2104	R1 REAGENT FOUND IN R2 REF (%2d,%s)
3127	R1 REAGENT ID READ ERROR $T ($02Bh)
3153	R1 REAGENT PROBE DETERGENT SHORT $T
3187	R1 REAGENT PROBE INTERNAL WASH DISABLED $T ($y,$u,$u)
3185	R1 REAGENT PROBE LEVEL DETECTOR ERROR ($y)
3182	R1 REAGENT PROBE ROTATION ERROR $T ($y,$u,$u)
3181	R1 REAGENT PROBE UP/DOWN ERROR $T ($y,$u,$u)
3138	R1 REAGENT REF. COVER OPEN $T
3183	R1 REAGENT REF. ROTATION ERROR $T ($y,$u,$u)
3214	R1 REAGENT SHORT $T ($I,$y)
3269	R1 REG. PROBE DETERGENT EMPTY (CLN-$y,$y)
3268	R1 REG. PROBE DETERGENT SHORT (CLN-$y,$y)
2096	R2 DIFFERENT LOT NO. (%s)
2094	R2 LOT NO. DIFFERENT FROM CAL. (%2d,%s) %c
2092	R2 LOT NO. DIFFERENT FROM RB. (%2d,%s) %c
3191	R2 REAGENT DISPENSER ERROR $T ($y,$u,$u)
3217	R2 REAGENT EMPTY $T ($S,$I,$y,$y)
3260	R2 REAGENT EMPTY $T ($S,$I,$y)
2103	R2 REAGENT FOUND IN R1 REF (%2d,%s)
3128	R2 REAGENT ID READ ERROR $T ($02Bh)
3154	R2 REAGENT PROBE DETERGENT SHORT $T
3194	R2 REAGENT PROBE INTERNAL WASH DISABLED $T ($y,$u,$u)
3192	R2 REAGENT PROBE LEVEL DETECTOR ERROR ($y)
3189	R2 REAGENT PROBE ROTATION ERROR $T ($y,$u,$u)
3188	R2 REAGENT PROBE UP/DOWN ERROR $T ($y,$u,$u)
3139	R2 REAGENT REF. COVER OPEN $T
3190	R2 REAGENT REF. ROTATION ERROR $T ($y,$u,$u)
3215	R2 REAGENT SHORT $T ($I,$y)
3271	R2 REG. PROBE DETERGENT EMPTY (CLN-$y,$y)
3270	R2 REG. PROBE DETERGENT SHORT (CLN-$y,$y)
3199	R2-MIX ROTATION ERROR $T ($y,$u,$u)

3198	R2-MIX UP/DOWN ERROR $T ($y,$u,$u)
3200	R2-MIXING ERROR $T
3274	RACK BUFFER COVER OPEN $T
3167	RACK BUFFER ERROR $T ($y,$u,$u)
3172	RACK BUFFER JAM $T
3273	RACK BUFFER STOPPER ERROR $T ($y,$u,$u)
3272	RACK BUFFER UNIT ERROR $T ($y,$u,$u)
3155	RACK CLASS ERROR $T
3146	RACK DETECTED ON FEEDER BELT $T ($02Bh)
3147	RACK DETECTED ON RERUN FEEDER $T ($02Bh)
3124	RACK ID READ ERROR $T ($y,$02Bh)
3149	RACK RECEIVER FULL $T
3173	RACK RECEIVER JAM $T
3174	RACK RECEIVER UNIT ERROR $T ($y,$u,$u)
3166	RACK SUPPLIER ERROR $T ($y,$u,$u)
3162	RB/ACAL SAMPLE PROHIBITED $T
3265	RB/ACAL/QC REAGENT INF. UNMATCH $T
9432	Reached End Of File
4034	REACTION DATA BASE ERROR (%3d) (%16s)
2102	REAGENT ID NOT DEFINED (%s,%2d)
2101	REAGENT ID READ ERROR (%s,%2d)
4025	REAGENT REF. TEMPERATURE HIGH
4024	REAGENT REF. TEMPERATURE LOW
3264	REAGENT TRANSPOSITION DISABLED $T ($I)
1022	REMOVE RACK FROM RACK FEEDER
4009	REPEAT BROKEN LABEL (%s-%s)
4004	REPEAT SAMPLE ID NOT FOUND (%s-%s)
4011	REPEAT SAMPLE ID READ ERROR (%s-%s)
4051	REPEAT SAMPLE NO CUP (%s %s-%02d)
4005	REPEAT SAMPLE NOP (%s-%s)
4032	ROUTINE EMERGENCY REPEAT STAT DATA BASE ERROR (%3d) (%16s)
3196	S/R1-MIX ROTATION ERROR $T ($y,$u,$u)
3195	S/R1-MIX UP/DOWN ERROR $T ($y,$u,$u)
3197	S/R1-MIXING ERROR $T
3178	SAMPLE DISPENSER ERROR $T ($y,$u,$u)
3220	SAMPLE EMPTY LEVEL DETECT $T ($S,$I,$y)
4003	SAMPLE ID NOT FOUND (%s-%s)
3122	SAMPLE ID READ ERROR $T ($02Bh)
4010	SAMPLE ID READ ERROR (%s-%s)
3157	SAMPLE INFORMATION UNMATCH $T ($02Bh,$u,$y,$y,$S)
4002	SAMPLE NOP (%s-%s)
3180	SAMPLE PROBE INTERNAL WASH DISABLED $T ($y,$u,$u)
3179	SAMPLE PROBE LEVEL DETECTOR ERROR ($y)
3177	SAMPLE PROBE ROTATION ERROR $T ($y,$u,$u)
3176	SAMPLE PROBE UP/DOWN ERROR $T ($y,$u,$u)
3171	SAMPLING POSITION, RACK JAM $T ($y)
3165	SAMPLING POSITION, RACK STEP DISABLED $T ($y)
3169	SAMPLING POSITION, RACK STEP UNIT ERROR $T ($y,$u,$u)
9173	SECONDARY PRINTER BUSY
9176	SECONDARY PRINTER PRINTOUT ERROR
9404	Some user account restriction has prevented successful authentication
1003	STANDBY
4103	STAT CAL./QC DUPLICATE ID (%s) %d
4104	STAT CAL./QC ID READ ERROR (%d)
3256	STAT COVER OPEN $T
3123	STAT SAMPLE ID READ ERROR $T ($02Bh)
4028	STAT SAMPLE MEASURE START CANCELED
3257	STAT SET OVER TIME
3175	STAT TABLE ERROR $T ($y,$u,$u)

4038	STAT TABLE TEMPERATURE HIGH
4039	STAT TABLE TEMPERATURE LOW
1013	STOP
3212	STRONG DRAIN TANK FULL $T
9491	SYSERR %03d , %04d
9447	System could not allocate required space in a registry log
1014	SYSTEM END PROCESS
9003	TEMPORARY LOGIN [%s]
9444	The attempted logon is invalid
9409	The configuration registry database is damaged
9414	The configuration registry key cannot be opened
9415	The configuration registry key cannot be read
9416	The configuration registry key cannot be written
9410	The configuration registry key is invalid
9459	The credentials supplied conflict with an existing set of credentials
9419	The database specified does not exist
9420	The directory is not empty
9421	The directory name is invalid
9413	The directory or file cannot be created
9431	The disk is full
9462	The disk media is not recognized. It may not be formatted
9422	The disk structure is damaged and nonreadable
9456	The drive cannot locate a specific area on the disk
9448	The drive is not ready
9430	The file name or extension is too long
9428	The file or directory is damaged and nonreadable
9457	The file pointer cannot be set on the specified device or file
9435	The flag passed is incorrect
9436	The flags are invalid
9440	The format of the specified password is invalid
9445	The global filename characters * or ? are entered incorrectly
9450	The I/O operation was aborted due to either thread exit or application request
9463	The media is write protected
9438	The parameter is incorrect
9441	The printer command is invalid
9451	The printer is out of paper
9442	The printer name is invalid
9453	The printer queue is full
9460	The process cannot access the file because it is being used by another
9455	The registry initiated an I/O operation that had an unrecoverable failure
9454	The registry is damaged
9411	The requested resource is in use
2001	THE SAME SAMPLE ID ALREADY REQUISITIONED (%s)
9439	The specified network password is incorrect
9408	The specified user name is invalid
9407	The storage control blocks were destroyed
9429	The system cannot find the file specified
9434	The system cannot find the specified drive
9461	The system cannot open the file
9449	The system cannot open the specified device or file
9406	The system is currently running with the last-known-good configuration
9437	The user account has time restrictions and cannot be logged onto at now
9443	The user account is restricted and cannot be used to log on
9403	The user's account has expired
9423	There is not enough space on the disk
9402	This account is currently disabled and cannot be logged on to
9433	This operation cannot be completed due to on-disk data structure corruption
9474	Too many open files [%s]
3145	VACUUM TANK FULL $T

1016	W1 END
1015	W1 START
1018	W2 END
1017	W2 START
1002	WARMUP
3213	WEAK DRAIN TANK FULL $T
9424	While accessing the hard disk, a disk operation failed
9425	While accessing the hard disk, a recalibrate operation failed

INITIALIZE
System Status
(1). The system has started initialization of its mechanical components. This is an advisory alarm.

WARMUP
System Status
(1). The temperature and optical systems are stabilizing. This is an advisory alarm.
User Action
None. The mode automatically changes to WARM-UP.

STANDBY
System Status
(1). The system has switched to the Stand-By mode. This is an advisory alarm.
User Action
None. The mode automatically changes to STAND-BY.

MEASURE START
System Status
(1). The system has started analysis. This is an advisory alarm.
User Action
None. The mode automatically changes to MEASURE-1.

NO MORE RACK
System Status
(1). The system has fed the last rack from the CA unit to the sample aspiration point. This is an advisory alarm.
User Action
None, although additional racks may be added and analysis started.
The mode automatically changes to MEASURE-2.

R1 DISPENSE FINISHED
System Status
(1). R1 reagents have been dispensed for all of the tests started. This is an advisory alarm.
User Action
None. The mode automatically changes to MEASURE-3.

CUVETTE WASH AFTER MEASUREMENT START
System Status
(1). Sample analysis is complete, the system is washing the cuvettes. This is an advisory alarm.
User Action
None. The mode automatically changes to MEASURE-4.

MEASURE END PROCESS
System Status
(1). Analysis of samples is complete and cuvette washing has finished. This is an advisory alarm.
User Action
None. The system switches from a MEASURE mode to STANDBY.

MEASURE END
System Status
(1). Analysis of samples is complete and cuvette washing has finished. This is an advisory alarm.
User Action
None. The system switches from a MEASURE mode to STANDBY.

MOVING TO STOP

System Status
(1). An event has occurred that has interrupted system operations.
This alarm is usually followed by other alarms describing the event in more detail. This is an advisory alarm, the system is switching to the STOP mode during analysis.
User Action
Clear this alarm and watch for any subsequent alarms. This usually indicates a hardware failure.

MOVING TO PAUSE

System Status
The system is switching to the PAUSE mode during analysis.
An advisory alarm is given.

PAUSE

System Status
The mode changes to PAUSE. An advisory alarm is given.
User Action
System operation can be continued by pressing the Start key.

STOP

System Status
The mode changes to STOP. An advisory alarm is given.
User Action
This alarm is usually triggered by a mechanical or computer error.
The cause must be determined and corrected before restarting.

SYSTEM END PROCESS

System Status
The mode changes to END. An advisory alarm is given.
Cause
End process has been selected via keyboard input. The analyzer is powering down.

W1 START

System Status
W1 operation starts. An advisory alarm is given.

W1 END

System Status
W1 operation ends. An advisory alarm is given.

W2 START

System Status
An advisory alarm is given. W2 operation starts.

W2 END

System Status
W2 operation ends. An advisory alarm is given.

PHOTCAL START

System Status
PHOTO CAL operation starts. An advisory alarm is given.

PHOTCAL END

System Status
PHOTO CAL operation ends. An advisory alarm is given.

REMOVE RACK FROM RACK FEEDER

System Status

2001 THE SAME SAMPLE ID ALREADY REQUISITIONED (aaaa)
System Status
(1). The same sample ID is rejected.
Cause
(1). In Bar code Analysis mode, the sample ID read (aaaa) has already been requisitioned and cannot be processed.
The sample ID is rejected.
aaaa : Sample ID

2002 NOT ALLOWED TO DELETE SAMPLE (aaaaa)
System Status
(1). Sample is not deleted.
Cause
(1). A sample inquired by the analyzer cannot be deleted.
aaaaa : Sample ID

2003 NOT ALLOWED TO DELETE REPEAT SAMPLE (aaaa)
Cause
(1). A repeat run sample inquired by the analyzer cannot be deleted.
aaaaa : Sample No.

2004 ALREADY REQUISITIONED REPEAT SAMPLE (aaaa)
System Status
(1). The system cannot add the requisitioned repeat run sample.
Cause
(1). If an input sample number is the same as a repeat run sample number that has already been registered in the repeat run data file, that sample number cannot be added.
aaaaa : Sample No.

2005 ALREADY MEASUREMENT STARTED (aaaaa)
System Status
(1). Unable to requisition calibration or reagent blank.
Cause
(1). The analyzer has already inquired about the requisitioned calibration sample or reagent blank sample.
aaaaa : Sample No.

2006 PRINTER NOT AVAILABLE
System Status
(1). Printer is busy.
Cause
(1). Printer cannot be used for printing a list during measure mode.

2007 Part of data is not output yet
Operation
(1). System is still under a measure mode. Analysis mode is not completed.
User Action
(1). Confirm that the printer is operational.
(2). Access the DPR STATUS screen from the SYSTEM STATUS ICON and press the function key 4 (F4) for printer control.
Select the analysis data, which has not yet been printed.
Cause
(1). This alarm indicates that the data printout is incomplete due to errors during the real-time print.

2008 Ordering
System Status
System does not change modes.
User Action
Restart after analysis has been completed.

2085 No RB Data (aaaa-b)CNo RB Data (aaaaa-b)
System Status
(1). No special processing is performed.
User Action
(1). Analyze the reagent blank of the item. After confirmation of the result, perform the analysis of the item.
Cause
(1). There is no reagent blank data.
Error detail.
aaaaa : Item name
b : Reagent sequence No.(Displayed in case of the item set to Advanced Calibration.)
c : Sample type(SPACE:Serum U:Urine X:Others)

2086 No CAL Data (aaaaa-b)
System Status
(1). No special processing is performed.
User Action
(1). Analyze the calibration of the item. After confirmation of the result, perform the analysis of the item.
Cause
(1). There is no calibration data.
Error detail.
aaaaa : Item name
b : Reagent sequence No.(Displayed in case of the item set to Advanced Calibration.)
c : Sample type(SPACE:Serum U:Urine X:Others)

2091 R1 LOT NO. DIFFERENT FROM RB (aa-bbbbb) c
System Status
(1). This is an advisory alarm.
Cause
(1). The lot no. of R1 on the reagent tray is different from the lot no. used for Reagent Blank.
User Action
(1). Perform Reagent Blank measure for the new lot of reagent.
Additional Information
(1). Error detail
aa : Tray Position No.
bbbbb : Test Name
c : Type (None : Serum U : Urine X: Other)

2092 R2 LOT NO. DIFFERENT FROM RB (aa-bbbbb) c
System Status
(1). This is an advisory alarm.
Cause
(1). The lot no. of R2 on the reagent tray is different from the lot no. used for Reagent Blank.
User Action
(1). Perform Reagent Blank measure for the new lot of reagent.
Additional Information
(1). Error detail
aa : Tray Position No.
bbbbb : Test Name
c : Type (None : Serum U : Urine X: Other)

2093 R1 LOT NO. DIFFERENT FROM CAL (aa-bbbbb) c

System Status
(1). This is an advisory alarm.
Cause
(1). The lot no. of R1 on the reagent tray is different from the lot no. used for Calibration.
User Action
(1). Perform Calibration with the new lot of reagent.
Additional Information
(1). Error detail
aa : Tray Position No.
bbbbb : Test Name
c : Type (None : Serum U : Urine X: Other)

2094 R2 LOT NO. DIFFERENT FROM CAL (aa-bbbbb) c
System Status
(1). This is an advisory alarm.
Cause
(1). The lot no. of R2 on the reagent tray is different from the lot no. used for Calibration.
User Action
(1). Perform Calibration with the new lot of reagent.
Additional Information
(1). Error detail
aa : Tray Position No.
bbbbb : Test Name
c : Type (None : Serum U : Urine X: Other)

2095 R1 DIFFERENT LOT NO. (aaaaa)
System Status
(1). This is an advisory alarm.
Cause
(1). R1 bottles for a Test on the reagent tray have different lot numbers.
User Action
(1). Replace R1 on the reagent tray so that all of R1 bottles for a Test have same Lot No.
Additional Information
(1). Error detail
aaaaa : Test Name

2096 R2 DIFFERENT LOT NO. (aaaaa)
System Status
(1). This is an advisory alarm.
Cause
(1). R2 bottles for a Test on the reagent tray have different lot numbers.
User Action
(1). Replace R2 on the reagent tray so that all of R2 bottles for a Test have same Lot No.
Additional Information
(1). Error detail
aaaaa : Test Name

2097 No Cleaner in Reagent Refrigerator aaaaa
System Status
(1). This is an advisory alarm.
User Action
(1). Open the edit menu in Reagent status and set the cleaner.
Cause
(1). Though the cleaner is set in Contamination parameters, it is not set in Reagent status.
(1). Error detail
aaaaa : Cleaner Name

2101 REAGENT ID READ ERROR (aa,bb)
System Status
(1). The error number is 1.
(2). The reagent shot data file is being updated.
The item name is ????.
User Action
(1). Check the bar code on the reagent bottle and then perform volume check.
(2). Verify that the correct reagent has been placed in the position assigned on the reagent tray.
Additional Information
(1). When checking reagent bar code label, an incorrect reagent ID was sent by the ANL to the DPR.
aa : Refrigerator unit : R1 or R2
bb : Reagent position : 1 to 48

2102 REAGENT ID NOT DEFINED (aa,bb)
System Status
(1). The error occurs when a reagent volume check is performed.
Cause
(1). When checking reagent bar code label, the item code of the ID read at the ID reading position does not match the code entered in the parameter menu.
User Action
Verify that the correct bar code ID has been entered in parameters. Wipe off reagent bar code ID label.
Additional Information
(1). When checking reagent bar code label, the item code of the ID read at the ID reading position does not match the code entered in the parameter menu.
aa : Refrigerator unit : R1 or R2
bb : Reagent position : 1 to 48

2103 R2 REAGENT FOUND IN R1 REF.(aaaaa,bb)
System Status
(1). The error occurs when a reagent volume check is performed.
User Action
Move the R2 reagent in the specified position to the R1 refrigerator.
Perform reagent volume check.
Additional Information
(1). When performing reagent volume check, R2 reagent detected in the R1 refrigerator at the specified reagent position.
aaaaa : Assay name
bb : Reagent position 1 to 48

2104 R1 REAGENT FOUND IN R2 REF. (aaaaa,bb)
System Status
(1). The error occurs when a reagent volume check is performed.
User Action
Move the R1 reagent in the specified position to the R2 refrigerator.
Perform reagent volume check.
Additional Information
(1). When performing reagent volume check, R1 reagent detected in the R2 refrigerator at the specified reagent position.
aaaaa : Assay name
bb : Reagent position 1 to 48

2105 ILLEGAL REAGENT POSITION (aa,bb)
System Status
(1). This error occurs during the reagent volume check.
Cause
(1). When performing the reagent volume check, the system detected an error at a fixed reagent position.
(2). After reading the reagent bar code label, the system detected an error in one or more of the following cases :
- The assay name is different from the preset assay name.
- The assay is not requisitioned.
User Action
(1). Verify that a properly labeled reagent vial is placed in the assigned position.
(2). Make the appropriate corrections and repeat the reagent volume check.
Additional Information
aa : Refrigerator unit : R1 or R2
bb : Reagent Position : 1 to 48

2106 ILLEGAL BOTTLE SIZE (aa,bb)
System Status
(1). There is a discrepancy between the reagent bottle specified in parameters and the reagent bottle detected during the reagent volume check or measure mode.
(2). Bottle size for the assay in question has not been specified.
User Action
(1). Assign the reagent position number and bottle size as follows :
1). To switch to fixed setting, check fixed position.
2). Enter the reagent assay name and appropriate bottle size.
Additional Information
(1). Incorrect bottle size specification.
aa : Refrigerator unit : R1 or R2
bb : Reagent position 1-48

2111 NO REPLY FROM ANL (aa,bb)
System Status
(1). The system moves to the STOP mode.
User Action
(1). Power down the system and re-boot.
Contact Olympus Technical Support if problem continues to occur.
Cause
(1). The analyzer does not send a response within a specific time frame for a request from the DPR.
aa : Message No.
bb : First byte of the message

2121 ILLEGAL FLOPPY DISK
Cause
(1). The floppy disk being used is not the correct type of disk for the task requested.
User Action
Remove the floppy disk and retry using the correct type of disk.

2122 NO DATA IN FLOPPY DISK
Cause
(1). The inserted disk is not a data diskette.
(2). The inserted disk does not contain data.
User Action
(1). Verify that the proper data disk has been inserted into the floppy drive.

2123 NO AREA IN FLOPPY DISK
System Status
(1). Data saving to the floppy disk is aborted.
Cause
(1). The floppy disk does not have enough space to save data.
User Action
(1). Insert another floppy disk with sufficient space and repeat data saving.

2131 ONLINE ERROR (aa) (bbbbbbbbb - ccccc - dd)
System Status
(1). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive has been designated as "STOP", then the following will occur:
1). Text following the alarm will not be received.
2). In a case when the test requisition is received real-time, the "STOP" status is ignored at the start of the next analysis and the test requisition will be received real-time again.
(2). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive has been designated to "CONTINUE", the test requisition for the next sample will be received real-time.
Cause
(1). Communication error occurs when transmitting the text for test requisition or when receiving the test requisition format.
(2). The display in the [ ] and its meaning are as follows.

aa	:	type of the errors
01	:	Device name error
02	:	Framing error
03	:	Over run error
04	:	Parity error
05	:	Time out error
06	:	Receive NAK when transmitting a text
07	:	BCC error when receiving a text
08	:	Other communication errors
09	:	Function error
10	:	Unit name error
11	:	Parameter error
12	:	Request cancel

bbbbbbbbb	:	Text having error
RB	:	Start text for receiving the test requisition information
RE	:	End text for receiving the test requisition information
R_ _ _ nnnn	:	normal run, normal sample, sample No.
R_ _E nnnn	:	normal run, emergency sample, sample No.
R_ _P nnnn	:	normal run, STAT sample, sample No.
R_ U_ nnnn	:	normal run, urine sample, sample No.
R_ UE nnnn	:	normal run, urine emergency sample, sample No.
R_ UP nnnn	:	normal run, urine STAT sample, sample No.
R_ X_ nnnn	:	normal run, urine sample, sample No.
R_ XUE nnnn	:	normal run, urine emergency sample, sample No.
R_ XP nnnn	:	normal run, urine STAT sample, sample No.
RH _ _ nnnn	:	repeat run, normal sample, sample No.
RH _E nnnn	:	repeat run, emergency sample, sample No.
RH _P nnnn	:	repeat run, STAT sample, sample No.
RH U_ nnnn	:	repeat run, urine sample, sample No.
RH UE nnnn	:	repeat run, urine emergency sample, sample No.
RH UP nnnn	:	repeat run, urine STAT sample, sample No.
RH X_ nnnn	:	repeat run, other sample, sample No.
RH XE nnnn	:	repeat run, other emergency sample, sample No.
RH XP nnnn	:	repeat run, other STAT sample, sample No.
R_ _ _ xxxxxxxxxxx	:	normal run, normal sample, sample ID
R_ _E xxxxxxxxxxx	:	normal run, emergency sample, sample ID
R_ _P xxxxxxxxxxx	:	normal run, STAT sample, sample ID
R_ U_ xxxxxxxxxxx	:	normal run, urine sample, sample ID
R_ UE xxxxxxxxxxx	:	normal run, urine emergency sample, sample ID
R_ UP xxxxxxxxxxx	:	normal run, urine STAT sample, sample ID
R_ X_ xxxxxxxxxxx	:	normal run, other sample, sample ID
R_ XE xxxxxxxxxxx	:	normal run, other emergency sample, sample ID
R_ XP xxxxxxxxxxx	:	normal run, other STAT sample, sample ID
RH _ _ xxxxxxxxxxx	:	repeat run, normal sample, sample ID
RH _E xxxxxxxxxxx	:	repeat run, emergency sample, sample ID
RH _P xxxxxxxxxxx	:	repeat run, STAT sample, sample ID
RH U_ xxxxxxxxxxx	:	repeat run, urine sample, sample ID
RH UE xxxxxxxxxxx	:	repeat run, urine emergency sample, sample ID
RH UP xxxxxxxxxxx	:	repeat run, urine STAT sample, sample ID
RH X_ xxxxxxxxxxx	:	repeat run, other sample, sample ID
RH XE xxxxxxxxxxx	:	repeat run, other emergency sample, sample ID
RH XP xxxxxxxxxxx	:	repeat run, other STAT sample, sample ID

ccccc	:	Rack number
dd	:	Cup position (1 to 10)

2132 ONLINE ERROR [aa] [bbbbbbbbb]

System Status

(1). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "STOP", the following events can occur:

1). The text following the alarm will not be received.

2). In a case when the test requisition is received real-time, the "STOP" designation is ignored and the test requisition will be received in real-time at the start of the next analysis.

(2). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "Continue", the test requisition for the next sample will be received.

Cause

(1). Communication error occurs when transmitting the text for test requisition or receiving the test requisition format.

(2). The display in the [ ] and its meaning are as follows.

aa : type of the errors

---

01 : Device name error
02 : Framing error
03 : Over run error
04 : Parity error
05 : Time out error
06 : Receive NAK when transmitting a text
07 : BCC error when receiving a text
08 : Other communication errors
09 : Function error
10 : Unit name error
11 : Parameter error
12 : Request cancel

---

bbbbbbbbb : Text having error

RB : Start text for receiving the test requisition information
RE : End text for receiving the test requisition information
R_ _ _ nnnn : normal run, normal sample, sample No.
R_ _E nnnn : normal run, emergency sample, sample No.
R_ _P nnnn : normal run, STAT sample, sample No.
R_ U_ nnnn : normal run, urine sample, sample No.
R_ UE nnnn : normal run, urine emergency sample, sample No.
R_ UP nnnn : normal run, urine STAT sample, sample No.
R_ X_ nnnn : normal run, other sample, sample No.
R_ XE nnnn : normal run, other emergency sample, sample No.
R_ XP nnnn : normal run, other STAT sample, sample No.

RH _ _ nnnn : repeat run, normal sample, sample No.
RH _E nnnn : repeat run, emergency sample, sample No.
RH _P nnnn : repeat run, STAT sample, sample No.
RH U_ nnnn : repeat run, urine sample, sample No.
RH UE nnnn : repeat run, urine emergency sample, sample No.
RH UP nnnn : repeat run, urine STAT sample, sample No.
RH X_ nnnn : repeat run, other sample, sample No.
RH XE nnnn : repeat run, other emergency sample, sample No.
RH XP nnnn : repeat run, other STAT sample, sample No.

R_ _ _ xxxxxxxxxx	:	normal run, normal sample, sample ID
R_ _E xxxxxxxxxx	:	normal run, emergency sample, sample ID
R_ _P xxxxxxxxxx	:	normal run, STAT sample, sample ID
R_ U_ xxxxxxxxxx	:	normal run, urine sample, sample ID
R_ UE xxxxxxxxxx	:	normal run, urine emergency sample, sample ID
R_ UP xxxxxxxxxx	:	normal run, urine STAT sample, sample ID
R_ X_ xxxxxxxxxx	:	normal run, other sample, sample ID
R_ XE xxxxxxxxxx	:	normal run, other emergency sample, sample ID
R_ XP xxxxxxxxxx	:	normal run, other STAT sample, sample ID
RH _ _ xxxxxxxxxx	:	repeat run, normal sample, sample ID
RH _E xxxxxxxxxx	:	repeat run, emergency sample, sample ID
RH _P xxxxxxxxxx	:	repeat run, STAT sample, sample ID
RH U_ xxxxxxxxxx	:	repeat run, urine sample, sample ID
RH UE xxxxxxxxxx	:	repeat run, urine emergency sample, sample ID
RH UP xxxxxxxxxx	:	repeat run, urine STAT sample, sample ID
RH X_ xxxxxxxxxx	:	repeat run, other sample, sample ID
RH XE xxxxxxxxxx	:	repeat run, other emergency sample, sample ID
RH XP xxxxxxxxxx	:	repeat run, other STAT sample, sample ID

2133 ONLINE FORMAT ERROR (aaaaaa - bbbbb - cc : NO SAMPLE No.)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for samples following the alarm.

Cause

(1). In the Online Parameter menu, submenu setup, the T.R.I. receive is not designated as "YES" for the necessary parameter.

(2). The display in the [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

---

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)

2134 ONLINE FORMAT ERROR (aaaaaa - bbbbb - cc : NO SAMPLE ID)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for samples following the alarm.

Cause

(1). In the Online Parameter menu, submenu setup, the T.R.I. receive is not designated as "YES" for the necessary parameter.

(2). The display in the [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample

UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

---

bbbbb	:	Transferred Rack No.
c	:	Transferred Cup position (1 to 10)

2135 ONLINE ILLEGAL TEXT CODE (aaaaaa - bbbbb - cc : dd)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for samples following the alarm.

Cause

(1). When receiving the test requisition information text using online, the text classification code is out of specification.

(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

---

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
dd	:	Received Text Code

2136 ONLINE ILLEGAL TEXT BLOCK No. (aaaaaa - bbbbb - cc : dd->ee)

System Status

(1). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "STOP", the following events occur :

1). Disregard the test requisition information text for the sample generating the alarm.

2). System will not receive text for samples following the sample generating the alarm.

3). In a case when the test requisition is received in real-time, the "STOP" is ignored and the test requisition text will be received with real-time again during the next analysis.

(2). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "Continue", the following events occur :

1). Disregard the test requisition information text for the sample generating the alarm.

2). The test requisition information text for the next sample will be received.

Additional Information

(1). When receiving the requisition information text using online, the block identification No. is out of specification.

(2). The display of [ ] and its meaning are as follows.

aaaaaa : Transferred sample type and sample No.

_ _ nnnn : Normal sample
_E nnnn : Emergency sample
_P nnnn : Stat sample
U_ nnnn : Urine normal sample
UE nnnn : Urine emergency sample
UP nnnn : Urine stat sample
X_ nnnn : Other normal sample
XE nnnn : Other emergency sample
XP nnnn : Other stat sample

---

bbbbb : Transferred Rack No.
cc : Transferred Cup position (1 to 10)
dd : Previously received block identification No.
ee : Last received block identification No.

2137 ONLINE ILLEGAL SAMPLE No. (aaaaaa - bbbbb - cc : dddddd)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for other samples within the run.

Cause

(1). When receiving the test requisition information text using online, sample No. of the sample generating the alarm does not meet the specification.

(2). The display of [ ] and its meaning are as follows.

aaaaaa : Transferred sample type and sample No.

_ _ nnnn : Normal sample
_E nnnn : Emergency sample
_P nnnn : Stat sample
U_ nnnn : Urine normal sample
UE nnnn : Urine emergency sample
UP nnnn : Urine stat sample
X_ nnnn : Other normal sample
XE nnnn : Other emergency sample
XP nnnn : Other stat sample

---

bbbbb : Transferred Rack No.
cc : Transferred Cup position (1 to 10)
dddddd : Received sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

2138 ONLINE ILLEGAL RACK No. (aaaaaa - bbbbb - cc : ddddd - ee)

System Status

(1). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "STOP", the following events occur :

1). Disregard the test requisition information text for the sample generating the alarm.

2). System will not receive text for samples following the sample generating the alarm.

3). In a case when the test requisition is received in real-time, the "STOP" is ignored and the test requisition text will be received with real-time again during the next analysis.

(2). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "Continue", the following events occur :

1). Disregard the test requisition information text for the sample generating the alarm.

2). The test requisition information text for the next sample will be received.

Additional Information

(1). When receiving the requisition information text using online, the rack No. is out of specification.

(2). The display of [ ] and its meaning are as follows.

aaaaaa : Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
ddddd	:	Received Rack No.
ee	:	Received Cup position (1 to 10)

2139 ONLINE ILLEGAL SAMPLE KIND (aaaaaa - bbbbb - cc : dd)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for the other samples within the run.

Cause

(1). When receiving the test requisition information text using online, sample kind No. of the sample generating the alarm does not meet the specification.

(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

---

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
dd	:	Received Sample type

_ _	:	Normal sample
_E	:	Emergency sample
_P	:	Stat sample
U_	:	Urine normal sample
UE	:	Urine emergency sample
UP	:	Urine stat sample
X_	:	Other normal sample
XE	:	Other emergency sample
XP	:	Other stat sample

2140 ONLINE ILLEGAL GENDER TEXT (aaaaaa - bbbbb - cc : d)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for other samples within the run.

Cause

(1). When receiving the requisition information text using online, the sex of this text is not within the specification.

(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

---

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
d	:	Sex Gender Received

2141 ONLINE ILLEGAL AGE/MONTH (aaaaaa - bbbbb - cc : ddd ee)

System Status
(1). Disregard the test requisition information text for the sample generating the alarm.
(2). Continue to receive the test requisition information text for other samples within the run.
Cause
(1). When receiving the requisition information text using online, age or month age (age of baby before one year) of this text is out of the specification.
(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

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bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
ddd	:	Received age
ee	:	Received month age

2142 ONLINE ANALYSIS METHOD MISMATCH (aaaaaa - bbbbb - cc : dd <> ee)

System Status
(1). Disregard the test requisition information text for the sample generating the alarm.
(2). Continue to receive the test requisition information text for other samples within the run.
Cause
(1). When receiving the test requisition information text using online, sample type of this text does not match the required sample type.
(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.

_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

---

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
dd	:	Transferred Sample type

_ _	:	Normal sample
_E	:	Emergency sample
_P	:	Stat sample
U_	:	Urine normal sample
UE	:	Urine emergency sample
UP	:	Urine stat sample
X_	:	Other normal sample
XE	:	Other emergency sample
XP	:	Other stat sample

ee	:	Received sample type
_ _	:	Normal sample
_E	:	Emergency sample
_P	:	Stat sample
U_	:	Urine normal sample
UE	:	Urine emergency sample
UP	:	Urine stat sample
X_	:	Other normal sample
XE	:	Other emergency sample
XP	:	Other stat sample

2143 ONLINE SAMPLE No. MISMATCH(aaaaaa - bbbbb - cc<>dddddd)

System Status

(1). Disregard the test requisition information text for the sample generating the alarm.

(2). Continue to receive the test requisition information text for the other samples within the run.

Cause

(1). When receiving the test requisition information text using online, sample type of this does not match the required sample.

(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.
_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
dddddd	:	Received sample type and sample No.
_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample

2144 ONLINE RACK No. MISMATCH (aaaaaa : bbbbb - cc<> ddddd - ee)

System Status
(1). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "STOP", the following events occur :
1). Disregard the test requisition information text for the sample generating the alarm.
2). System will not receive text for samples following the sample generating the alarm.
3). In a case when the test requisition is received in real-time, the "STOP" is ignored and the test requisition text will be received with real-time again during the next analysis.
(2). In the Online Parameter menu, submenu Error Control, if the T.R.I. receive is designated as "Continue", the following events occur :
1). Disregard the test requisition information text for the sample generating the alarm.
2). The test requisition information text for the next sample will be received.
Additional Information
(1). When receiving the test requisition information text using online, rack No. of this does not match the required sample.
(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.
_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample
bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
ddddd	:	Received Rack No.
ee	:	Received Cup position (1 to 10)

2145 ONLINE MISMATCH (aaaaaa - bbbbb - cc : ddddddddd<>eeeeeeeee)

System Status
(1). Disregard the test requisition information text for the sample generating the alarm.
(2). Continue to receive the test requisition information text for the other samples within the run.
Cause
(1). When receiving the test requisition information text uisng online, sample ID of this text does not match the required ones.
(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.
_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample
bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
ddddddddd	:	Transferred sample ID
eeeeeeeee	:	Received sample ID

2146 ONLINE TEST ITEM ERROR (aaaaaa - bbbbb - cc)

System Status
(1). Disregard the test requisition information text for the sample generating the alarm.
(2). Continue to receive the test requisition information text for the other samples within the run.
Cause
(1). When receiving the test requisition information text using online, the test requisition cannot be stored.
(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.
_ _ nnnn	:	Normal sample
_E nnnn	:	Emergency sample
_P nnnn	:	Stat sample
U_ nnnn	:	Urine normal sample
UE nnnn	:	Urine emergency sample
UP nnnn	:	Urine stat sample
X_ nnnn	:	Other normal sample
XE nnnn	:	Other emergency sample
XP nnnn	:	Other stat sample
bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)

2147 ONLINE REPEAT ITEM ERROR (aaaaaa - bbbbb - cc : dddddd)

System Status
(1). Disregard the repeat run test requisition information for the sample generating the alarm.
(2). Continue to receive the test requisition information text for the other samples within the run.
Cause
(1). When receiving the test requisition information text for repeat run using online, repeat run test requisition cannot be stored with for the following reasons.
1). Original sample that is designated in the repeat run text is not stored in the normal run/sample test requisition information.
2). Sample No. is not set to the original sample that is designated in the repeat run text.
3). Original sample that is designated in the repeat run text has already been stored as a repeat run sample for another sample.
(2). The display of [ ] and its meaning are as follows.

aaaaaa	:	Transferred sample type and sample No.
H_ _ nnnn	:	repeat run, Normal sample
H_E nnnn	:	repeat run, Emergency sample
H_P nnnn	:	repeat run, Stat sample
HU_ nnnn	:	repeat run, Urine normal sample
HUE nnnn	:	repeat run, Urine emergency sample
HUP nnnn	:	repeat run, Urine stat sample
HX_ nnnn	:	repeat run, Other normal sample
HXE nnnn	:	repeat run, Other emergency sample
HXP nnnn	:	repeat run, Other stat sample
bbbbb	:	Transferred Rack No.
cc	:	Transferred Cup position (1 to 10)
dddddd	:	sample type and original sample No.
_ _nnnn	:	Normal sample
_ _Ennn	:	Emergency sample
_ _Pnnn	:	Stat sample
_U_nnn	:	Urine normal sample
_UEnnn	:	Urine emergency sample
_UPnnn	:	Urine stat sample
_Xnnnn	:	Other normal sample
_XEnnn	:	Other emergency sample

_XPnnn : Other stat sample

2148 ONLINE FORMAT ERROR (RECEIVE TEXT LENGTH NOT EQUAL)

System Status
(1). Disregard the test requisition information text for the sample generating the alarm.
(2). Continue to receive the test requisition information text for the other samples within the run.
Cause
(1). When receiving the test requisition information text using online, length of this text is out of the specification.

2151 DTR SET ERROR

System Status
(1). System movies to the STOP mode.
(2).There is no communication between the DPR and the Analyzer.
(3).DPR functions not utilizing the analyzer may be performed.
User Action
(1). Perform system down using the END process function.
(2).Check the communication connectors at the back of the computer.
(3) Re-boot the system.
(4).If the alarm continues to occur, call the Technical Support.
Cause
(1). A communication error of setting a signal of DSR occurs between the computer and Analyzer.

2152 DSR CHECK TIMEOUT

System Status
(1). System movies to the STOP mode.
(2).There is no communication between the DPR and the Analyzer.
(3).DPR functions not utilizing the analyzer may be performed.
User Action
(1). Perform system down using the END process function.
(2).Check the communication connectors at the back of the computer.
(3) Re-boot the system.
(4).If the alarm continues to occur, call the Technical Support.
Cause
(1). A communication error of time out a signal of DTR occurs between the computer and Analyzer.

2214 ANL Communication Overrun Error (aa, bb, c)

System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). Communication overrun error occurs when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2215 ANL Communication Parity Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). Parity error occurs when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2216 ANL Communication Framing Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). Framing error occurs when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2217 ANL Communication other SIO Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). Other SIO error occurs when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2218 ANL Communication ENQ send Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). Communication error occurs when transmitting ENQ to ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2219 ANL Communication NAK Receive (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). DPR received NAK from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2220 ANL Communication Timeout Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). Timeout error occurs when Transmitting to ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2221 ANL Communication Not Receive STX (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). DPR received except STX with the top of text when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2222 ANL Communication Receive Text length not equal (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). DPR received the illegal length of the text when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2223 ANL Communication Receive Illegal ETX Location (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). DPR received the illegal position of ETX when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2224 ANL Communication BCC Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). BCC error occurs when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2225 ANL Communication Text Code Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). DPR received the illegal text when receiving from ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2226 ANL Communication Text Sending Char Receive Error (aa, bb, c)
System Status
(1). Proceed to the next process.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). DPR received text under transmitting to ANL.
Error details
aa: Message No.
bb: Error No.
c: Retry No.

2251 PRINTER NOT SELECTED

System Status
(1). No printout the user selected list.
User Action
(1). Please check the menu parameter of [parameter][Format][Printer].
Cause
(1). There is no printer for the printing of the list.

2301 NO FLOPPY DISK

System Status
(1).Floppy drive operations stop.
User Action
(1).Insert a floppy disk and retry the operation.
Cause
(1). Floppy disk is not inserted into the floppy drive.

2302 FLOPPY DISK READ/WRITE ERROR

System Status
(1). Floppy disk operations stop.
User Action
(1). .If the data on the disk is no longer needed, perform the following.
a). Select the “maintenance “menu-“Data operation”-“FD initialize”.
b). Intialize the floppy disk generating this error according to the menu prompt.
c).If the disk initialize without any problems, use this floppy disk for the operation
d).If the error re-occurs, use another floppy disk.
(2).If the disk generating the error is not a disk that is used to store data, please do not use this disk on this or any other AU400 system.
User Action
(1). An error occurred when attempting to read or write the data off the floppy disk.

3103 POWER FAILURE DETECTED

System Status
(1). An advisory alarm is given.
Cause
(1). The power supply to the system was interrupted.
User Action
(1). Press the power failure detection reset switch.
(2). As the power to the refrigerator was cut, the reagents on board could be compromised. Re-calibration and a QC check are advised.

3104 PHOTOMETER CPU INITIAL ERROR (aa)

System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
User Action
(1). Reinitialize the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). Check connectors on the ANL control board and all connectors on the photometry boards and restart the system. If an error reoccurs, replace the ANL control board, photometry boards.
(2). In case of a ROM error, check connection of the photometry ROM and restart the system. If an error reoccurs, replace the photometry board.
(3). The following error occurs in the photometry unit sub-CPU in initialization.
aa : Error details (Hex.)
bit 0 : The ROM check sum is not correct
bit 1 : Data cannot be read and written from / into the S-RAM properly
bit 2 : An error is present in the ARCK NET
bit 3 : An error is present in the OPMC

3105 COM. CONTROL CPU INITIAL ERROR (aa)

System Status
(1). Although the DPR can continue functioning, the ANL is inoperable. The communications control CPU has failed initialization.
User Action
(1). Reinitialize the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). Check connection of the ISE interface communication ROM and restart the system. If an error reoccurs, replace the ANL control board .
(2). In case of a ROM error, replace the board .
(3). The following error occurs in the communication control CPU during initialization.
aa : Error details (Hex.)
bit 0 : Initialization is not completed in time
bit 1 : The ROM check sum is not correct
bit 2 : Data cannot be read and written from / into the S-RAM properly
bit 3 : Data cannot be read and written from / into the DP-ROM properly

3106 OPTICAL COM. MASTER INITIAL ERROR (aa, bb, cc)

System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
Cause
(1). Communications via the fiber optic subsystem has failed during initialization.
User Action
(1). Restart the system.
(2). If the problem reoccurs, call Olympus Technical Support.
Additional Information
(1). Any of the following errors occurs in the optical communication CPU.

Error details

aa : Primary station status (Hex.)
- bit 0 : DMA error
- bit 1 : Reception error
- bit 2 : Transmission error
- bit 3 : System error (in initialization)
- bit 4 : Undefined
- bit 5 : In the downloading mode
- bit 6 : In transmission
- bit 7 : Ready to receive a command

bb : Primary station system error status (Hex.)

bit 0 : ROM error
- bit 1 : S-RAM error
- bit 2 : DP-RAM error
- bit 3 : communication error

cc : Error in primary station status (Decimal)
(When primary station status is "disconnect circuit")
- 01H : LAN master or Reagent container
- 02H : Reagent container or R1 probe
- 03H : R1 probe or R2 Mixer
- 04H : R2 Mixer or Sample probe
- 05H : Sample probe or Rack unloading or Rack recovery
- 06H : Rack unloading or Rack recovery
- 07H : Rack recovery or Dispenser
- 08H : Dispenser or S/R1 Mixer
- 09H : S/R1 Mixer or R2 probe
- 0AH : R2 probe or LAN master

Error factor (Hex.)
(When primary station status is send / receive)
- bit 0 : Undefined
- bit 1 : Undefined
- bit 2 : CRC error
- bit 3 : Over-run
- bit 4 : Fraction bit is detected
- bit 5 : Abort
- bit 6 : Short frame is detected
- bit 7 : Reception is not completed

(2). Check connection of the optical communication connectors on the optical communication master ROM and ANL control board , then restart the system. If a ROM error recurs, replace the board.

(3). If an S-RAM or DP-RAM error occurs, replace the board .
If the line is disconnected or a communication error occurs, check connection of all connectors on the secondary error station board and restart the system.

(4). If an error reoccurs, replace the secondary error station board.

3107 OPTICAL COM. SLAVE INITIAL ERROR (aa)

System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
Cause
(1). An error has occurred in the optical communications system during initialization.
User Action
(1). Reinitialize the analyzer. If the problem recurs, call Olympus Technical Support.
Additional Information
(1). Check all connectors on the secondary error station board and restart the system. If an error reoccurs, replace the secondary error station board.
(2). The following errors occurs in the motor controller of the secondary optical communication in station during initialization.

aa : secondary error (Hex.)
- 01H : Reagent container
- 02H : R1 probe
- 03H : R2 Mixer
- 04H : Sample probe
- 05H : Rack unloading
- 06H : Rack recovery
- 07H : Dispenser
- 08H : S/R1 Mixer
- 09H : R2 probe

3108 PHOTOMETER CPU -> ANL COM. ERROR (aa, bb, cc, dd)

System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
(2). The mode changes to STOP.
Cause
(1). A communications error has occurred between the photometry CPU and the analyzer's main CPU.
User Action
(1). Reinitialize the analyzer. If the problem recurs, call Olympus Technical Support.
Additional Information
(1). Check connectors on the ANL control board and all connectors on the photometry boards then restart the system. If an error reoccurs, replace the boards.
(2). Reset the system. If an error reoccurs in resetting, check the sub-CPU using ANL DIAG. If an error still recurs, take the same measures as taken for an error in initialization.
(3). The ANL receives an invalid message code from the photometry sub-CPU.
Error details

aa : Received message code (Hex.)
bb : Data in the ARCK NET status register (Hex.)
cc : Data in the ARCK NET status configuration register (Hex.)
dd : Data in the ARCK NET DIAG register (Hex.)

3109 PHOTOMETER CPU -> ANL TEXT NOT RECEIVED (aa, bb, cc, dd)

System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
(2). The mode changes to STOP.
Cause
(1). The analyzer has not received a message from the photometry sub-CPU.
User Action
(1). Reinitialize the analyzer. If the problem recurs, call Olympus Technical Support.
Additional Information
(1). Check connectors on the ANL control board and all connectors on the photometry boards then restart the system. If an error reoccurs, replace the boards.
(2). Reset the system. If an error reoccurs in resetting, check the sub-CPU using ANL DIAG. If an error still reoccurs, take the same measures as taken for an error in initialization.

Error details
aa : Message code to be received (Hex.)
bb : Data in the ARCK NET status register (Hex.)
cc : Data in the ARCK NET status configuration register (Hex.)
dd : Data in the ARCK NET DIAG register (Hex.)

3110 ANL -> PHOTOMETER CPU COM. ERROR (aa, bb, cc, dd)
System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
(2). The mode changes to STOP.
Cause
A communications error has occurred during a message from the analyzer to the photometer CPU.
User Action
(1). Reinitialize the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). Check connectors on the ANL control board and all connectors on the photometry boards then restart the system. If an error recurs, replace the boards..
(2). Reset the system. If an error recurs in resetting, check the sub-CPU using ANL DIAG. If an error still recurs, take the same measures as taken for an error in initialization.
Error details
aa : Message code causing the error (Hex.)

bb : Data in the ARCK NET status register (Hex.)
bit 0 : Ready to send
bit 1 : ACK is received
bit 2 : Configuration occurs
bit 3 : Test is executed
bit 4 : Resetting is completed
bit 5 : Undefined
bit 6 : Undefined
bit 7 : Reception is completed

cc : Data in the ARCK NET configuration register (Hex.)
bit 0 : Sub address
bit 1 : Sub address
bit 2 : Back plane mode
bit 3 : Test is executed
bit 4 : Extended time
bit 5 : Extended time
bit 6 : TXEN
bit 7 : Reset

dd : Data in the ARCK NET diagnostic register (HEX.)
bit 0 : Undefined
bit 1 : Undefined
bit 2 : TENTTD
bit 3 : EXNAK
bit 4 : TOKEN
bit 5 : RCVACT
bit 6 : DUPID
bit 7 : MYRECON

3111 PHOTOMETER CPU ERROR (aa, b)
System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
(2). The mode changes to Stop.
Cause
(1). Any of the following errors occurs in the photometry sub-CPU.
a). Sub-CPU fails to become ready to write a command reception.
b). The CPU receives an undefined command.

c). Parameter error.
User Action
Reinitialize the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). Reset the system. If an error recurs in resetting, check the sub-CPU using ANL DIAG. If an error still recurs, take the same measures as taken for an error in initialization.
Error details
aa : Send command (Hex.)
b : System status
1 : System busy
2 : Wheel rotation disable
3 : Parameter error
4 : Unknown command
5 : Double receive command
6 : Initial position error after INITIALIZE
7 : Stop position error after photometry

3112 OPTICAL COM. ERROR (aa, bb, cc, dd)

System Status
(1). In initialization
Although the DPR can continue functioning, the ANL is inoperable.
(2). On completion of initialization (except for DIAG and MAINTENANCE)
The mode changes to STOP.
(3). During DIAG or MAINTENANCE
Operation stops.
Cause
An error has occurred in the fiber-optic communications system.
User Action
(1). Restart the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). In initialization
Check the optical communication connectors on the ANL control board , then restart the system.
If an error recurs, check connection of all connectors on the secondary error station board, then restart the system.
If an error recurs, replace the secondary error station board.
(2). In Operation (2) or (3)
Reset the system. If an error recurs in resetting, check the sub-CPU using ANL DIAG. If an error still recurs, take the same measures as taken for an error in initialization.
Error Details
aa : Error type (Hex.)
10 : DMA error when writing primary station command
11 : Cannot write command to primary station
20 : Semaphore error when writing parameter to secondary station
40 : DMA / Transfer / receive error when writing command to non-selected secondary station
41 : Cannot write command when writing command to non-selected secondary station

bb : Primary station status (Hex.)
bit 0 : DMA error
bit 1 : Reception error
bit 2 : Transmission error
bit 3 : System error (in initialization)
bit 5 : In the download mode
bit 6 : In transmission
bit 7 : Ready to receive a command

cc : Error primary / secondary station (Hex.)
Case 1 (except aa=20)
bit 2 : CRC error
bit 3 : Overrun error
bit 4 : Fraction bit is detected
bit 5 : Abort
bit 6 : Detecting short flame
bit 7 : Missing the end of receive

Case 2 (aa=20)
01H : Reagent container
02H : R1 probe
03H : R2 Mixer
04H : Sample probe
05H : Rack unloading
06H : Rack recovery
07H : Dispenser
08H : S/R1 Mixer
09H : R2 probe

3113 OPMC ERROR (aa, bb, cc)
System Status
(1). In initialization
Although the DPR can continue functioning, the ANL is inoperable.
(2). On completion of initialization (except for DIAG and MAINTENANCE)
The mode changes to STOP.
(3). During DIAG or MAINTENANCE
Operation stops.
Cause
(1). An error occurs in the motor controller of the secondary optical communication station.
User Action
(1). Restart the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). In initialization
Check the optical communication connectors on the ANL control board, then restart the system.
If an error recurs, check connection of all connectors on the secondary error station board, then restart the system.
If an error recurs, replace the secondary error station board.
(2). In case of Operation (2) or (3)
Reset the system. If an error recurs in resetting, check the sub-CPU using ANL DIAG. if an error still recurs, take the same measures as taken for an error in initialization.
Error Details
aa : Error Secondary station
bb : Time table No.
cc : Phase No.

3114 ANL -> COM. CONTROL CPU I/F ERROR (aa)

System Status
(1). In Initialization :
Although the DPR can continue functioning, the ANL is inoperable.
(2). On completion of initialization (except for DIAG and MAINTENANCE)
The mode changes to STOP.
(3). During DIAG or MAINTENANCE
Operation stops.
Cause
(1). An error occurs when the ANL is accessing the communication sub-CPU.
User Action
(1). Restart the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). In Initialization
Check connectors on the ANL control board, ISE I / F ROM , all connectors on the ISE control board and ISE control ROM , then restart the system. If an error recurs, replace the boards.
(2). In case of Operation (2) or (3)
Reset the system. If an error recurs in resetting, take the same measures as taken for an error in initialization.
aa : Error details (Hex.)
bit 0 : Request to send is issued but the ISE is not connected
bit 1 : Invalid command is received
bit 7 : Not ready to receive a command

3115 ANL -> BAR CODE READER COM. ERROR (aa,bb)

System Status
(1). During Initialization
For a rack ID, Reagent error the ANL becomes inoperable.
For a S.ID or STAT error the mode changes to STOP.
(2). On completion of initialization (except for DIAG and MAINTENANCE)
The mode changes to STOP.
(3). During DIAG or MAINTENANCE
Operation stops.
Cause
(1). An error occurs when the ANL is sending data to the communication sub-CPU.
User Action
(1). Restart the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). In Initialization
1). Check integrity of connector on the ANL control board , ISE I / F ROM , and the bar code reader that triggered the error, then restart the system.
If an error recurs, confirm that the communication parameters of the bar code reader are set to 4800 and no parity, then restart. If an error recurs, replace the boards and the bar code reader.
2). If an error occurs in the Reagent ID, or rack ID reader and bar code analysis is not carried out, it is possible to replace the bar code reader with the S.ID or STAT reader.
Error details
aa : (Hex.)
01H : Rack ID / S.ID
03H : STAT
04H : Reagent

bb : (Hex.)
bit 1 : No acknowledgment is received in time
bit 2 : NAK is received
bit 3 : One-character transmission is not completed in time

3116 ANL <- BAR CODE READER COM. ERROR (aa,bb)

System Status

(1). During Initialization :
For a rack ID, Reagent ID error the ANL becomes inoperable.
For S.ID or STAT errors, the mode changes to STOP.
(2). On completion of initialization (except for DIAG and MAINTENANCE)
The mode changes to STOP.
(3). During DIAG or MAINTENANCE :
Operation stops.

Cause

(1). An error occurs when the ANL is sending data to the communication sub-CPU.

User Action

(1). Restart the system. If the error recurs, call Olympus Technical Support.

Additional Information

(1). Check the integrity of the connector on the ANL control board , the ISE I / F ROM and the bar code reader that triggered the error, then restart the system.
If an error recurs, confirm that the communication parameters of the bar code reader are set to 4800 and no parity, then restart. If an error recurs, replace the boards, and the bar code reader.
(2). If an error occurs in the Reagent, or rack ID reading and bar code analysis is not carried out, it is possible to replace the bar code reader with the S.ID or STAT reader.

Error details

aa : (Hex.)
- 01H : S.ID
- 02H : Rack ID
- 03H : R1 Reagent
- 04H : R2 Reagent
- 05H : STAT

bb : (Hex.)
- bit 0 : Message length error
- bit 1 : Failure to complete from STX to LF
- bit 2 :
- bit 3 :
- bit 4 : Over-run error
- bit 5 : Framing error
- bit 6 :
- bit 7 : Overwriting the message

3118 ANL <- DPR COM. ERROR-1 (aa,bb)

System Status

Cause

(1). An error has occurred while the ANL is receiving a message from the DPR.
(2). This error is triggered if the message fails two attempts at transmission.

User Action

Restart the system. If the error recurs, call Olympus Technical Support.

Additional Information

(1). Check connection of the communication circuit between ANL (COM) and connector on the ANL control board , then restart the system.
(2). If an error recurs, replace the board and communication cable.
If necessary, also replace the DPR.

Error details
aa: Message number (Hex.)

bb : (Hex.)
bit 0 : STX cannot be received within time
bit 1 : Received except STX
bit 2 : Failure to complete from STX to BCC
bit 3 : BCC error
bit 4 : No EXT
bit 5 : Framing error or over-run error

3119 ANL <- DPR TEXT NOT RECEIVED (aa)
System Status
(1). Although the DPR can continue functioning, the ANL is inoperable.
Cause
(1). The ANL failed to receive a message from the DPR.
User Action
(1). Restart the system. If the error recurs, call Olympus Technical Support.
Additional Information
Error details
aa : Message No.

3121 ANL -> DPR COM. ERROR (aa,bb)
System Status
(1). Although the DPR and ANL can continue functioning.
Cause
(1). The ANL has failed in a second attempt at transmitting a message to the DPR.
User Action
(1). Restart the system. If the error recurs, call Olympus Technical Support.
Additional Information
(1). An acknowledge (ACK or NAK) to a message sent by the ANL to the DPR is not received in time.
(2). Check connection of the communication circuit between the DPR and ANL (COM) and connector on the ANL control board , then restart the system.
(3). If an error recurs, replace the board and communication cable.
If necessary, also replace the DPR.
Error details
aa : Message No. (Hex.)

bb : (Hex.)
bit 0 : An acknowledge to ENQ is not received in time
bit 1 : ENQ is returned in response to ENQ
bit 2 : An acknowledge to transmission is not received in time
bit 3 : NAK is returned in response to transmission
bit 4 : Non ACK / NAK is returned in response to transmission
bit 5 : Text is received in transmission
bit 6 : Time-out is in transmission

3122 RACK/SAMPLE ID READ ERROR (aa)

Cause
(1). The analyzer has not read a bar code label correctly.
User action
(1). Check the bar code label for scratches, cleanliness, and position on the tube.
Description
(1). An error has occurred when reading the S.ID bar code during DIAG.
Error details
aa : (Hex.)
bit 0 : Reading is not completed in time
bit 1 : Check character check error
bit 2 : Wrong number of digits

3123 STAT SAMPLE ID READ ERROR (aa)

Cause
(1). The analyzer has failed to read a Stat bar code correctly.
User Action
(1). Check the bar code for scratches, cleanliness and position on the tube.
Description
Error details
aa : (Hex.)
bit 0 : Reading is not completed in time
bit 1 : Check character check error
bit 2 : Wrong number of digits

3124 RACK ID READ ERROR (aa,bb)

System Status
(1). During MEASURE
Mode changes to MEASURE-2.
User Action
(1). Check the rack bar code for scratches, cleanliness and position.
Additional Information
(1). An error has occurred when reading the rack ID bar code label.
Error details
aa : Rack type (Hex.)
1 : General
2 : Emergency
3 : Repeat run
4 : ACAL
5 : QC
Error details
bb : (Hex.)
bit 0 : Reading is not completed in time
bit 1 : Check character check error
bit 2 : Wrong number of digits

3127 R1 REAGENT ID READ ERROR (aa)

Cause
(1). The analyzer has failed to read a REAGENT bar code in DIAG-MODE.
User Action
(1). Check the bar code for scratches, cleanliness and position.
Additional Information
Error details
aa : (Hex.)
bit 0 : Reading is not completed within time
bit 1 : Check character check error
bit 2 : Wrong number of digits

3128 R2 REAGENT ID READ ERROR (aa)

Cause
(1). The analyzer has failed to read a REAGENT bar code in DIAG-MODE.
User Action
(1). Check the bar code for scratches, cleanliness and position.
Additional Information
Error details
aa : (Hex.)
bit 0 : Reading is not completed within time
bit 1 : Check character check error
bit 2 : Wrong number of digits

3129 ORIGINAL DETERGENT B EMPTY

System Status
(1). If the alarm occurs while refilling detergent B, the detergent preparation pump stops.
(2). The mode changes to WARM-UP or STAND-BY; the system will not start with this alarm.
(3). Detergent B preparation in DIAG is not executed.
Cause
(1). Non-diluted detergent B is low.
User Action
(1). Refill non-diluted detergent B and confirm that the ANL status error is reset. If it is not reset, check the connector of the non-diluted detergent float switch.

3130 ORIGINAL DETERGENT A EMPTY

System Status
(1). If the alarm occurs while refilling detergent A, the detergent preparation pump stops.
(2). The mode changes to the WARM-UP or STAND-BY mode. The system will not start with this alarm.
(3). Detergent A preparation in DIAG is not executed.
Cause
(1). Non-diluted detergent A is low.
User Action
(1). Refill non-diluted detergent A and confirm that the ANL status error is reset. If it is not reset, check the connector of the non-diluted detergent float switch.

3131 DETERGENT B SHORT

System Status
(1). The detergent preparation pump should turn on and prepare diluted detergent B.
(2). The mode changes to WARM-UP or STAND-BY. The system will not start with this alarm.
(3). The mode changes to PAUSE.
(4). The Detergent B pump stops.
Cause
(1). Detergent B is low.
User Action
(1). If a non-diluted detergent B insufficient alarm hasn't been given before this alarm takes place, check the tubing of detergent B and the float switch connector.
If a detergent B overflow alarm is triggered, check for air bubbles in the tubing.
If the undiluted detergent bottle is full, the overflow sensor is off, the deionized water tank is full, and the level does not increase in STAND-BY, check if the detergent preparation pump is running.
If the detergent preparation pump is running, touch the detergent preparation valve to check if it is opening and closing.

3132 DETERGENT A SHORT

System Status
(1). The detergent preparation pump should turn on and prepare diluted detergent A.
(2). The mode changes to WARM-UP or STAND-BY. The system will not start with this alarm.
(3). The mode changes to PAUES.
(4). The Detergent A pump stops.
Cause
(1). Detergent A is low.
User Action
(1). If a non-diluted detergent A insufficient alarm hasn't been given before this alarm takes place, check the tubing of detergent A and the float switch connector.
If a detergent A overflow alarm is triggered, check for air bubbles in the tubing.
If the undiluted detergent bottle is full, the overflow sensor is off, the deionized water tank is full, and the level does not increase in STAND-BY, check if the detergent preparation pump is running.
If the detergent preparation pump is running, touch the detergent preparation valve to check if it is opening and closing.
(2). Unless corrected, Detergent B will overflow.

3133 DI WATER SHORT

System Status
(1). The deionized water and detergent pumps stop.
(2). The system cannot be started with this alarm.
(3). If deionized water does not fill in 1 minute, an alarm is given to indicate that the water supply is off. The mode changes to STOP.
(4). No operation is carried out.
User Action
(1). Check the main valve of the ion exchange water. If the main valve is open, check the flow rate and operation of the ion exchange water feed valve and CLB.
(2). If there is sufficient deionized water, check the float switch connector.

3134 DI WATER EMPTY

System Status
(1). The deionized water and detergent pumps stop.
(2). The system cannot be started with this alarm.
(3). This alarm indicates that the water supply is off. The mode changes to STOP.
(4). No operation is carried out.
User Action
(1). Check the main valve of the ion exchange water. If the main valve is open, check the flow rate and operation of the ion exchange water feed valve and CLB.
(2). If there is sufficient deionized water, check the float switch connector.
Additional Information
(1). Deionized water is below specifications for one minute.

3135 DETERGENT B OVERFLOW

System Status
(1). The diluted Detergent B tank has overfilled.
(2). This error will not prevent the system from starting.
User Action
(1). Check the tubing for air bubbles. If no air bubbles are found, check the float switch connector. Also check the detergent B dilution valve for leakage.
Additional Information
(1). Unless corrected, Detergent B will overflow.

3136 DETERGENT A OVERFLOW

System Status
(1). The diluted Detergent A tank has overfilled.
(2). This error will not prevent the system from starting.
User Action
(1). Check the tubing for air bubbles. If no air bubbles are found, check the float switch connector. Also check the detergent A dilution valve for leakage.
Additional Information
(1). Unless corrected, Detergent A can overflow.

3137 DI WATER OVERFLOW

System Status
(1). Although this alarm will not stop the system from starting, it should be immediately addressed.
User Action
(1). Confirm that the water level in the deionized water tank has stopped rising.
(2). If the water level is still rising, turn off the water supply to the system.
Additional Information
(1). Unless corrected, the deionized water tank will overflow.

3138 R1 REAGENT REF. COVER OPEN

System Status
(1). Reagent check functions are not started. The system switches to Warm-Up, Stand-By, or Stop modes.
Cause
(1). The R1 Reagent cover is open during a reagent check or measuring.
User Action
(1). Close the cover and retry the reagent check.

3139 R2 REAGENT REF. COVER OPEN

System Status
(1). Reagent check functions are not started. The system switches to Warm-Up, Stand-By, or Stop modes.
Cause
(1). The R2 Reagent cover is open during a reagent check or measuring. .
User Action
(1). Close the cover and retry the reagent check.

3140 INCUBATION. BATH/REAGENT REF. TMP. A/D ERROR

System Status
(1). The incubator bath temperature display cannot be updated.
User Action
(1). If this alarm occurs frequently, restart the system. If restarting does not eliminate the error, call Olympus Technical Support.
Additional Information
(1). EOC of the temperature measuring A / D is not detected in time.
(2). Replace the ANL control board

3141 LAMP OFF

System Status
Case in PHOTOCAL and Measure starting
(1). The mode is no changes.
Case in Measure mode
(2). The mode changes to STOP; the system cannot be started.
Cause
(1). Usually, this indicates that the photometry lamp has burned out.
User Action
(1). If the lamp is off, replace it and perform a PHOTO CAL. If the lamp is on, call Olympus Technical Support.
Additional Information
(1). Check the connectors on the ANL control board and all connectors on the light measurement boards . Restart operation.

3142 LAMP DARK

System Status
(1). The mode is no changes.
Cause
(1). The photometry lamp is too dim.
User Action
(1). Perform a W1 and start the system. If an error recurs, perform a Photocal and check the WB data. If the overall O.D. is too large, replace the lamp.
If some of the cuvettes are abnormal, clean or replace the cuvettes. If the error continues, call Olympus Technical Support.
Additional Information
(1). If no abnormality is found, check connectors on the ANL control board) and all connectors on the photometry boards. Restart operation.

3143 PHOTOMETER DATA ERROR (aa)

System Status
(1). The mode is no changes; the system cannot be started.
Cause
(1). Photometry data is abnormal.
User Action
(1). Execute W1, then retry Start. If an error recurs, call Olympus Technical Support.
Additional Information
(1). Check connectors on the ANL control board and all connectors on the photometer boards. Restart operation.
Error details
aa : (Decimal)

1	:	Lamp brightness
2	:	0% data error
3	:	Gain error
4	:	Offset error

3144 NO VACUUM PRESSURE

System Status
(1). The mode changes to STOP; the system cannot be started.
(2). No operation generating waste liquid is performed.
Cause
(1). There is insufficient vacuum for liquid waste.
User Action
(1). Reset the system. Check for the sound of the vacuum pump operating.
If the sound is abnormal or no sound is heard, check for the sound of an air leak from near the cuvette cleaning unit.
If the sound is always heard during system resetting, check for a leak from the atmospheric pressure relief valve, suction valves, and vacuum tank waste liquid valve.

3145 VACUUM TANK FULL

System Status
(1). Waste liquid is discharged until the full sensor turns off.
The waste pump will continue operation for one additional minute.
(2). The mode changes into STOP mode; the system cannot be started.
(3). No operation generating waste liquid is performed.
User Action
(1). Wait until the status of the ANL is reset (the status will not change for one minute after the waste sensor turns off).
If the tank status does not reset, visually inspect the tank. If waste liquid remains in the tank, check operation of the atmospheric pressure relief valves, aspiration valves, and vacuum tank waste liquid valves.
Additional Information
(1). Unless corrected, waste liquid will overflow the waste liquid tank.

3146 RACK DETECTED ON FEEDER BELT (aa)

System Status
(1). The mode changes to STOP ; the system cannot be started.
User Action
(1). Remove the rack. If no rack is present, call Olympus Technical Support to check function of the sensor.
Additional Information
(1). There is a rack on the unloading belt when the STOP mode changes to the WARM-UP, STAND-BY or MEASURE1 modes.
Error details
aa : (Hex.)
bit 0 : Unloading backward motion prohibition sensor(S7) turns on
bit 1 : Unloading rack arrival sensor(S101) turns on
bit 2 : Cup detection sensor(S8) turns on.

3147 RACK DETECTED ON RERUN FEEDER BELT (aa)

System Status
(1). The mode changes to STOP; the system cannot be started.
Cause
(1). There is a rack on the recovery belt when the STOP mode changes into the WARM-UP, STAND-BY, or MEASURE1 modes.
User Action
(1). Remove the rack. If no rack is present, call Olympus Technical Support to check function of the sensors.
Additional Information
Error details
aa : (Hex.)
bit 0 : Recovered rack detection sensor(S111) is on
bit 1 : Sensor(S114) is on
bit 2 : Repeat run rack passing sensor(S113) is on
bit 3 : Repeat run rack arrival sensor(S112) is on
bit 4 : Sensor(S102) is on

3149 RACK RECEIVER FULL

System Status
(1). The mode changes to STOP.
(2). The mode changes to STAND-BY without starting operation.
(3). The mode changes to MEASURE-2 without starting operation.
(4). The mode changes to PAUSE (MEASURE to PAUSE) without starting operation.
(5). If the rack is removed when next rack is pushed out, mode changes from MEASURE to PAUSE.
(6). Operation stops.
Cause
(1). The rack storage is full.
User Action
(1). Remove the racks. If no racks are present, call Technical Support to check function of the sensor.

3150 NO RACK

System Status
(1). The mode is no change.
Cause
(1). No rack is found on the rack loading mechanism during MEASURE start.
User Action
(1). Set a rack on the rack feed caterpillar. If there is a rack, call Olympus Technical Support to check operation of the sensor.

3151 NO STAT CUP

System Status
(1). Any samples in racks are analyzed without performing STAT.
Cause
(1). Usually, no cup is set on the STAT table.
User Action
(1). Set a sample on the STAT table. If there is a cup, call Olympus Technical Support to check the function of the sensor.

3152 NO SAMPLE PROBE DETERGENT (aa)

System Status
(1). During STAND-BY to MEASURE
A RESTART inquiry is made.
(2). When W2 starts
The mode changes to WARM-UP or STAND-BY without starting operation.
Cause
(1). The sample probe detergent on the STAT table is low when MEASURE or W2 starts.
User Action
(1). In either case, set a tube filled with sample probe detergent in the sample detergent 1 position. If the probe does not detect detergent call Olympus Technical Support to check function of the level sensor.
Additional Information
Error details
aa : cup type (Hex.)
bit 0 : Cleaning cup 1
bit 1 : Cleaning cup 2

3153 R1 REAGENT PROBE DETERGENT SHORT

System Status
(1). When W2 starts
The mode changes to WARM-UP or STAND-BY.
(2). During W2
Operations continue.
Cause
(1). The REAGENT detergent is low when W2 starts.
User Action
(1). When W2 starts
Set detergent at position in R1 reagent container
If the probe does not detect detergent, check the function of the level sensor.
(2). During W2
Stop operation at once, refill the detergent bottle, and restart W2.

3154 R2 REAGENT PROBE DETERGENT SHORT

System Status
(1). When W2 starts
The mode changes to WARM-UP or STAND-BY.
(2). During W2
Operations continue.
Cause
(1). The REAGENT detergent is low when W2 starts.
User Action
(1). When W2 starts
Set detergent at the position in R2 reagent container
If the probe does not detect detergent, check the function of the level sensor.
(2). During W2
Stop operation at once, refill the detergent bottle, and restart W2.

3155 RACK CLASS ERROR

System Status
(1). The mode changes to Measure 2 or Measure 3.
Cause
(1). The rack type is not being read properly.
User Action
(1). Reset the rack. If it is set properly, check operation of the sensors using the DIAG function.

3157 SAMPLE INFORMATION UNMATCH T (aa, bb, cc, dd, ee)

System Status
(1).
Cause
(1).
User Action
(1).

3160 ACAL INCOMPLETE

System Status
(1). The calibrator sample number is increased to measure the next ACAL sample.
Cause
(1). The last number of ACAL rack are not set or the rack feeder was stopped during ACAL.
User Action
(1). Check if the cups and racks are set according to the calibrator position programming. If they are set properly, call Olympus Technical Support to check for a faulty cup sensor.

3161 QC INCOMPLETE

System Status
(1). The system proceeds to the next QC sample.
Cause
(1). The last number of QC rack are not set or the rack feeder was stopped during QC.
User Action
(1). Check if the cups and racks are set according to the control position programming. If they are set properly, call Olympus Technical Support to check for a faulty cup sensor.

3162 RB/ACAL SAMPLE PROHIBITED

System Status
(1). Manual STAT Reagent blank / calibration was interrupted.
User Action
(1). The system will request the repeat of the reagent blank and the calibration prior to sample analysis.
Cause
(1). STAT QC/Calibration requested during measuring STAT QC/ACAL

3163 AUTOMATIC REPEAT ILLEGAL RACK No. T (aa, bbbb)

System Status
(1).
User Action
(1).
Cause
(1).

3164 AUTOMATIC REPEAT RACK OVER

System Status
(1). The mode changes from MEASURE to STOP.
User Action
(1). This error is caused by removing racks from the rack unloader.
Do not remove the rack collected on the unloader side if the system is programmed to perform automatic repeats.
Cause
(1). The automatic repeat run rack buffer is full.

3165 SAMPLING POSITION, RACK STEP DISABLED T (aa)

System Status
(1). The mode is changes to STOP.
Cause
(1). An error has occurred while the rack unloading belt is running.
User Action
(1). Remove any racks on the feeder belts. Rerun samples as necessary.
Additional Information
(1). An error has occurred while the rack unloading belt is running.
Error details
T : Time table No.
aa : (Decimal)
1 : Except Upper position where sample probe is Rack position.
2 : Up/Down motor is busy where sample probe is Rack position.

3166 RACK SUPPLIER ERROR T (aa,bb,cc)

System Status
(1). The mode is changes to STOP.
User Action
Refer to the Additional Information below.
(1). Contact Technical Support Department.
Additional Information
(1). An error has occurred when unloading racks.
Error code
T : Time Sequence No.
aa : (Decimal)

1	:	Motor busy
2	:	The unloading-side disable motion sensor(S7) turns on when operation starts
3	:	The rack pass sensor(S113) turns on when operation starts
4	:	The backward prohibition sensors(S112) turns on when backward motion starts
5	:	The unloading-side stop position sensor(S1) turns off when forward motion is completed
6	:	The recovery-side stop position sensors(S2) turns off when backward motion is completed

bb : Time Table No.
cc : Phase No.

3167 RACK BUFFER ERROR T (aa,bb,cc)

System Status
(1). Operations stop.
User Action
Refer to the Additional Information below.
(1). Contact Olympus Technical Support.
Additional Information
(1). An error has occurred while unloading racks.
Error codes
T : Time Sequence No.
aa : (Decimal)

1	:	Motor busy
2	:	The origin sensor(S103) turns off after moving to unloading position.
3	:	The rack detection sensor(S102) turns off after moving to the rack recovery position
4	:	The rack sensor(S111) turns off after moving to the rack recovery position.
5	:	The sensor(S106) turns off after pushing the rack.
6	:	The sensor(S106) turns off after moving to the origin position.
7	:	The stop sensor(S104) side recovery turns on after moving to the origin position.
8	:	The origin sensor(S103) turns on when moving out of the origin.
9	:	The recovery stop position sensor(S104) turns off after moving to recovery position.
10	:	The side-sending of recovery is busy when moving to the recovery position.
11	:	The origin sensor(S107) of recovery side-sending turns off when moving to the recovery position.
12	:	The arrival sensor of rack (S101) turns on when moving to the origin position.

bb : Time Table No.
cc : Phase No.

3168 CUP DETECTION POSITION, RACK STEP UNIT ERROR T (aa,bb,cc)

System Status
(1). Operations stop.
User Action
Refer to the Additional Information below.
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the rack stepping pawls are moving at the cup detecting position.
Error details
T : Time Sequence No.
aa : (Decimal)
1 : Motor busy
2 : The origin sensor(S11) turns off after the pawls move to the origin
3 : The origin sensor(S11) turns on after the pawls move to the stop or open position

bbbb : (Decimal)
Time table No.

cccc : (Decimal)
Phase No.

3169 SAMPLING POSITION, RACK STEP UNIT ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the rack stepping pawls are moving at the sample aspirate position.
Error details
T : Time Sequence No.
aa : (Decimal)
1 : Motor busy
2 : The origin sensor(S14) turns off after the pawls move to the origin
3 : The origin sensor(S14) turns on after the pawls move to the stop or open position

bbbb : (Decimal)
Time table No.

cccc : (Decimal)
Phase No.

3171 SAMPLING POSITION, RACK JAM T (aa)

System Status
(1). The mode changes to STOP.
User Action
(1). Check for slipping of the unloading belt.
Additional Information
(1). The rack has not advanced to the sample aspirate position.
T : Time Sequence No.
aa : Stepping position (1 to 9)

3172 RACK BUFFER JAM T
System Status
(1). The mode changes to STOP.
User Action
(1). If the racks did not reach the recovery caterpillar(S101), check for slipping of the unloading belt.
Additional Information
(1). Racks are not being loaded onto the rear rack caterpillar.
T : Time Sequence No.

3173 RACK RECEIVER JAM T
System Status
(1). The mode changes to STOP.
User Action
(1). If the racks did not reach the recovery caterpillar(S101), check for slipping of the unloading belt.
Additional Information
(1). Racks are not being loaded onto the rear rack caterpillar.
T : Time Sequence No.

3174 RACK RECEIVER UNIT ERROR T (aa,bb,cc)
System Status
(1). The mode changes to STOP.
Cause
(1). An error has occurred while the system was moving a rack to the storage position.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Error details (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
: 2 : The rack full sensor(S26) turns on when pushing operation starts
3 : The rack pushing prohibition sensor(S114) turns on when pushing operation starts
4 : The unloading prohibition sensor(S113) turns on when pushing operator starts
5 : The pushing sensor(S25) turns off when pushing is completed.
6 : The drawing position sensor(S24) turns off when drawing is completed
7 : The drawing position sensor(S25) turns on when the mechanism moves away from origin
8 : The pulling position sensor(S24) turns on when the mechanism moves away from origin
bb : Time table No.
cc : Phase No.

3175 STAT TABLE ERROR T (aa,bb,cc)
System Status
(1). The mode changes to STOP.
Cause
An error has occurred when the STAT table is moving.
User Action
Please refer to the error codes below :
(1).Contact Olympus Technical Support.
Additional Information
Error details (Decimal)
T : Time sequence No.

aa : 1 : Motor busy
2 : The sample probe is at the STAT position and the up / down motor is busy when operation starts
3 : The sample probe is at the STAT position and the upper position(S36) sensor is off when operation starts
4 : No rotate
5 : The stop position sensor(S30) turns off after the mechanism has moved to the origin
6 : The origin sensor(S29) turns off when operation is completed
7 : The origin sensor(S29) turns on when the mechanism gets out of the origin
8 : The stop position sensor(S30) turns on when the mechanism gets out of the origin

3176 SAMPLE PROBE UP/DOWN ERROR T (aa,bb,cc)
System Status
(1). The mode changes to STOP.
Cause
(1). An error has occurred while the sample probe was moving up or down.
User Action
(1). Contact Olympus Technical Support.
Description
Error details (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The sample probe rotating motor is busy when operation starts
3 : The cuvette wheel rotating motor is busy when downward motion starts at the cuvette position
4 : The rack carrying belt is busy when downward motion starts at the sample aspirate position
5 : The sample position rack stepper is busy when downward motion starts at the sample aspirate position
6 : The STAT wheel is busy when downward motion starts at the STAT position
7 : The cuvette wheel stop position sensor(S57) turns off when downward motion starts at the cuvette position
8 : The sample position rack stepping origin sensor(S14) turns off when downward motion starts at the sample aspirate position
9 : The sample position rack stepping check sensor(S16) turns off when downward motion starts at the sample aspirate position.
10 : The STAT stop position sensor(S30) turns off when downward motion starts at the STAT position
11 : The cuvette position sensor(S34) turns off when downward motion starts at the cuvette position.
12 :
13 : The sample probe stop position sensor(S35) turns off when downward motion starts at the sample aspirate, ISE aspirate, cleaning, ISE discharge, or out-of-STAT position
14 : The sample probe upper limit position sensor(S42) turns off after completion of upward motion
15 : The sample probe upper limit position sensor(S42) turns on after completion of downward motion
16 : The detection sensor(S37) turns on after completion of downward motion.
17 :
18 : The sample probe upper position sensor(S36) turns off after completion of upward motion
19 : The sample probe upper position sensor(S36) turns on after completion of downward motion
bb : Time table No.
cc : Phase No.

3177 SAMPLE PROBE ROTATION ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Description
(1). An error occurs while the sample probe is rotating.
Error details (Decimal)

T : Time sequence No.

aa :
- 1 : Motor busy
- 2 : The sample probe up / down motor is busy when operation starts
- 3 : The sample probe upper position sensor(S36) turns off when operation starts
- 4 : The sample probe cuvette sensor(S34) turns off when the mechanism has moved to the cuvette position
- 5 : The sample probe STAT position sensor(S35) turns off when the mechanism has moved to the inside of the STAT
- 6 : The sample probe stop position sensor(S35) turns off when the mechanism has moved to the sample aspirate, ISE aspirate, cleaning, or ISE discharge position
- 7 : The sample probe rack position sensor(S33) turns on after the mechanism gets out of the origin
- 8 : The sample probe cuvette position sensor(S34) turns on after the mechanism has moved to the origin
- 9 : The sample probe stop position sensor turns on after the mechanism has moved to the origin

bb : Time table No.
cc : Phase No.

3178 SAMPLE DISPENSER ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1).Contact Olympus Technical Support.
Description
(1). An error occurs when the sample dispenser is running.
Error codes (Decimal)

T : Time sequence No.

aa :
- 1 : Motor busy
- 2 : The sample probe rotating motor is busy when discharging starts
- 3 : The sample probe upper position sensor(S36) turns on when discharging starts.
- 4 : The sample dispenser upper position sensor(S38) turns off.
- 5 : The sample dispenser lower position sensor(S39) turns off.
- 6 : The sample dispenser upper position sensor(S38) turns on
- 7 : The sample dispenser lower position sensor(S39) turns on

bb : Time table No.
cc : Phase No.

3179 SAMPLE PROBE LEVEL DETECTOR ERROR T (aa)

System Status
(1). During MEASURE or WASH initialization the mode changes to WARM-UP or STAND-BY without starting operation.
User Action
(1). Call Olympus Technical Support.
Additional Information
(1). An error occurs in the sample liquid level sensor(S40).
Error details (Decimal)
T : Time sequence No.
aa : 1 : The liquid level sensor(S40) turns off on completion of downward motion at the cleaning position.
2 : The liquid level sensor(S40) turns on completion of upward motion at the cleaning position
3 : The liquid level latch signal turns on completion of upward motion at the cleaning position

3180 SAMPLE PROBE INTERNAL WASH DISABLED T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). The sample probe cleaning valve fails to open for any of the following reasons.
Error codes (Decimal)
T : Time sequence No.
aa : 1 : The sample probe rotating motor is busy when opening the valve
2 : The sample probe position is not at the cleaning position when opening the valve
3 : The sample probe upper sensor(S36) turn on when opening the valve.
bb : Time table No.
cc : Phase No.

3181 R1 REAGENT PROBE UP/DOWN ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the Reagent probe is moving up or down.
Error codes (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The reagent probe rotating motor is busy when operation starts
3 : The cuvette wheel rotating motor is busy when downward motion starts at the cuvette position
4 : The reagent refrigerator rotating motor is busy when downward motion starts at the reagent aspirate position
5 : The cuvette wheel stop position sensor(S57) turns off when downward motion starts at the cuvette position
6 : The reagent refrigerator rotation inside stop position sensor(S49) turns off when downward motion starts at the reagent aspirate position
7 : The reagent refrigerator rotation outside stop position sensor(S50) turns off when downward motion starts at the reagent aspirate position.
8 : The reagent probe cuvette sensor(S43) turns off when downward motion starts at the cuvette position
9 : The reagent probe reagent position sensor(S45) turns off when downward motion starts at the reagent aspirate position
10 : The reagent probe reagent position sensor(S44) turns off when downward motion starts at the cleaning position/predilution position/DI exchange position.
11 : The reagent probe upper position sensor(S46) turns off after moving up
12 : The reagent probe upper position sensor(S46) turns on after moving down
13 : The clash error sensor(S47) turns on after moving down.
bb : Time table No.
cc : Phase No.

3182 R1 REAGENT PROBE ROTATION ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
Please refer to the error codes below :
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the Reagent probe is rotating.
Error codes (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The up / down motor is busy with the reagent probe at the reagent aspirate position when operation starts
3 : The reagent probe upper position sensor(S46) turns off when operation starts
4 : The reagent probe cuvette sensor(S43) turns off when after moving to the cuvette position
5 : The reagent probe reagent position sensor(S45) turns off after moving to the reagent aspirate position
6 : The reagent probe stop position sensor(S44) turns off after moving to the cleaning position.
7 : The reagent probe cuvette position sensor(S43) turns on after getting out of the origin
8 : The reagent probe position sensor(S45) turns on after moving to the origin
9 : The probe stop position sensor turns on after moving to the origin
bb : Time table No.
cc : Phase No.

3183 R1 REAGENT REF. ROTATION ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
Please refer to the error codes below :
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the Reagent tray is rotating.
Error codes (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The up / down motor is busy with the reagent probe at the reagent position when operation starts
3 : The upper position sensor(S46) turns off with the reagent probe at the reagent position when operation starts
4 : No rotation
5 : The 33 items stop sensor(S49) turns off after moving to the stop position
6 : The reagent refrigerator origin position sensor(S48) turns off after moving to the origin
7 : The reagent refrigerator origin sensor(S48) turns on after moving out of the origin
8 : The reagent refrigerator 33 items stop position(S49) sensor turns on after moving out of the origin
9 : The reagent refrigerator 48 items stop position sensor(S50) turns on after moving out of the origin
10 : The reagent refrigerator 48 items stop position sensor(S50) turns off after moving to the stop position.
bb : Time table No.
cc : Phase No.

3184 R1 REAGENT DISPENSER ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
Please refer to the error codes below :
(1). Contact Olympus Technical Support.
Description
(1). An error occurs when the reagent dispenser is running.
Error codes (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The sample probe rotating motor is busy when discharging starts
3 : The sample probe upper position sensor(S53) turns on when discharging starts.
4 : The sample dispenser upper position sensor(S53) turns off.
5 : The sample dispenser lower position sensor(S54) turns off.
6 : The sample dispenser upper position sensor(S53) turns on
7 : The sample dispenser lower position sensor(S54) turns on
bb : Time table No.
cc : Phase No.

3185 R1 REAGENT PROBE LEVEL DETECTOR ERROR T(aa)

System Status
(1). During MEASURE or WASH starts, the mode changes to WARM-UP or STAND-BY without starting operation.
User Action
(1). Call Olympus Technical Support.
Additional Information
(1). Any of the following errors occurs in the Reagent liquid level sensor.
Error codes (Decimal)

T : Time sequence No.
aa : 1 : The liquid level sensor(S55) turns off on completion of downward motion at the cleaning position.
2 : The liquid level sensor(S55) turns on completion of upward motion at the cleaning position
3 : The liquid level latch signal turns on completion of upward motion at the cleaning position

3187 R1 REAGENT PROBE INTERNAL WASH DISABLED T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
System Status
(1). The reagent probe cleaning valve fails to open for any of the following reasons.
Error codes (Decimal)

T : Time sequence No.
aa : 1 : The reagent probe rotating motor is busy when opening the valve
2 : The reagent probe rotating position is not at the cleaning position(S44) when opening the valve
3 : The reagent probe upper sensor(S46) turn on when opening the valve.
bb : Time table No.
cc : Phase No.

3188 R2 REAGENT PROBE UP/DOWN ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the Reagent probe is moving up or down.
Error codes (Decimal)

T : Time sequence No.
aa : 1 : Motor busy
2 : The reagent probe rotating motor is busy when operation starts
3 : The cuvette wheel rotating motor is busy when downward motion starts at the cuvette position
4 : The reagent refrigerator rotating motor is busy when downward motion starts at the reagent aspirate position
5 : The cuvette wheel stop position sensor(S57) turns off when downward motion starts at the cuvette position
6 : The reagent refrigerator rotation inside stop position sensor(S120) turns off when downward motion starts at the reagent aspirate position
7 : The reagent refrigerator rotation outside stop position sensor(S121) turns off when downward motion starts at the reagent aspirate position.
8 : The reagent probe cuvette sensor(S115) turns off when downward motion starts at the cuvette position

9 : The reagent probe reagent position sensor(S117) turns off when downward motion starts at the reagent aspirate position
10 : The reagent probe reagent position sensor(S116) turns off when downward motion starts at the cleaning position/predilution position/DI exchange position..
11 : The reagent probe upper position sensor(S118) turns off after moving up
12 : The reagent probe upper position sensor(S118) turns on after moving down
13 : The clash error sensor(S119) turns on after moving down.

bb : Time table No.
cc : Phase No.

3189 R2 REAGENT PROBE ROTATION ERROR T (aa,bb,cc)
System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the Reagent tray is rotating.
Error codes (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The up / down motor is busy with the reagent probe at the reagent position when operation starts
3 : The upper position sensor(S118) of reagent probe turns off when operation starts
4 : The cuvette position sensor(S116) of reagent probe turns off after moving to cuvette position.
5 : The reagent position sensor(S117) turns off after moving to reagent position
6 : The reagent stop position sensor(S115) turns off after moving to cleaning position.
7 : The reagent probe cuvette sensor(S115) turns on after getting out of the origin
8 : The origin sensor(S115) turns on after moving to the origin
9 : The probe stop position sensor(S115) turns on after moving to the origin

bb : Time table No.
cc : Phase No.

3190 R2 REAGENT REF. ROTATION ERROR T (aa,bb,cc)

System Status

(1). The mode changes to STOP.

User Action

Please refer to the error codes below :

(1). Contact Olympus Technical Support.

Additional Information

(1). An error occurs when the Reagent tray is rotating.

Error codes (Decimal)

T : Time sequence No.

aa :
- 1 : Motor busy
- 2 : The up / down motor is busy with the reagent probe at the reagent position when operation starts
- 3 : The upper position sensor(118) turns off with the reagent probe at the reagent position when operation starts
- 4 : No rotation
- 5 : The 33 items stop sensor(S121) turns off after moving to the stop position
- 6 : The reagent refrigerator origin position sensor(S120) turns off after moving to the origin
- 7 : The reagent refrigerator origin sensor(S120) turns on after moving out of the origin
- 8 : The reagent refrigerator 33 items stop position(S121) sensor turns on after moving out of the origin
- 9 : The reagent refrigerator 48 items stop position sensor(S122) turns on after moving out of the origin
- 10 : The reagent refrigerator 48 items stop position sensor(S122) turns off after moving to the stop position.

bb : Time table No.

cc : Phase No.

3191 R2 REAGENT DISPENSER ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
Please refer to the error codes below :
(1). Contact Olympus Technical Support.
Description
(1). An error occurs when the reagent dispenser is running.
Error codes (Decimal)

T : Time sequence No.
aa : 1 : Motor busy
2 : The sample probe rotating motor is busy when discharging starts
3 : The sample probe upper position sensor(S125) turns on when discharging starts.
4 : The sample dispenser upper position sensor(S125) turns off.
5 : The sample dispenser lower position sensor(S126) turns off.
6 : The sample dispenser upper position sensor(S125) turns on
7 : The sample dispenser lower position sensor(S126) turns on
bb : Time table No.
cc : Phase No.

3192 R2 REAGENT PROBE LEVEL DETECTOR ERROR (aa)

System Status
(1). During MEASURE or WASH starts, the mode changes to WARM-UP or STAND-BY without starting operation.
User Action
(1). Call Olympus Technical Support.
Additional Information
(1). Any of the following errors occurs in the Reagent liquid level sensor.
Error codes (Decimal)

T : Time sequence No.
aa : 1 : The liquid level sensor(S127) turns off on completion of downward motion at the cleaning position.
2 : The liquid level sensor(S127) turns on completion of upward motion at the cleaning position
3 : The liquid level latch signal turns on completion of upward motion at the cleaning position

3194 R2 REAGENT PROBE INTERNAL WASH DISABLED T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
System Status
(1). The reagent probe cleaning valve fails to open for any of the following reasons.
Error codes (Decimal)

T : Time sequence No.
aa : 1 : The reagent probe rotating motor is busy when opening the valve
2 : The reagent probe rotating position is not at the cleaning position(S44) when opening the valve
3 : The reagent probe upper sensor(S46) turn on when opening the valve.
bb : Time table No.
cc : Phase No.

3195 S/R1-MIX UP/DOWN ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the mixing unit moves up or down.
Error details (Decimal)

T : Time sequence No.
aa : 1 : Motor busy
2 : The mixbar unit rotating motor is busy when operation starts
3 : The cuvette wheel rotating motor is busy when downward motion starts
4 : The cuvette wheel stop position sensor(S57) turns off when downward motion starts
5 : The mixbar unit stop position sensor(S59) turns off when downward motion starts
6 : The mixbar unit upper position sensor(S60) turns off after moving up
7 : The mixbar unit upper position sensor(S60) turns off after moving down
bb : Time table No.
cc : Phase No.

3196 S/R-MIX ROTATION ERROR T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
Please refer to the error codes below :
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the mixing unit rotates.
Error details (Decimal)

T : Time sequence No.
aa : 1 : Motor busy
2 : The mixbar unit up/down motor is busy when operation starts
3 : The mixbar unit upper position sensor(S60) turns off when operation starts
4 : The mixbar unit stop position sensor(S59) turns off after moving to the stop
5 : The mixbar unit origin position sensor(S58) turns off after moving to the origin position
6 : The mixbar unit origin position sensor(S58) turns on after getting out of the origin
7 : The mixbar unit stop position sensor(S59) turns on after moving to the origin
bb : Time table No.
cc : Phase No.

3197 S/R-MIXING ERROR T
System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). The agitator is busy after its rotation is completed.
T : Time sequence No.

3198 R2-MIX UP/DOWN ERROR T
System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). An error occurs when the mixing unit moves up or down.
Error details (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The mixbar unit rotating motor is busy when operation starts
3 : The cuvette wheel rotating motor is busy when downward motion starts
4 : The cuvette wheel stop position sensor(S57) turns off when downward motion starts
5 : The mixbar unit stop position sensor(S131) turns off when downward motion starts
6 : The mixbar unit upper position sensor(S132) turns off after moving up
7 : The mixbar unit upper position sensor(S132) turns off after moving down
bb : Time table No.
cc : Phase No.
(1). The agitator is busy after its rotation is completed.
T : Time sequence No.

3199 R2-MIX ROTATION ERROR T
System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). The agitator is busy after its rotation is completed.
T : Time sequence No.

3200 R2-MIXING ERROR T
System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). The agitator is busy when its rotation start.
T : Time sequence No.

3201 CUVETTE WASH UNIT ERROR T (aa,bb,cc)

System Status
(1). Mode shifts to STOP.
Cause
(1). A mechanical error has occurred in the Cuvette Washer.
User Action
(1). Reset the machine following procedures described below.
a). If the alarm occurred during MEASURE, wait until MEASURE is finished.
Then remove racks on the rack transfer belt.
b). Press STOP / STANDBY key.
c). Wait until the mode shifts to WARM UP or STAND BY.
(2). When restarting MEASURE, follow procedures described below.
a). Confirm the last sample using the data log list or the Data Edit menu.
b). Set unmeasured samples into racks or the Stat Rotor.
c). Confirm the start number is correct; set the first sample number as the start S.No. in the Start Condition menu.
(3). If the alarm recurs contact Olympus Technical Support.
Additional Information
(1). An error occurs when the cuvette washer is moving.
Error details (Decimal)

T :	Time sequence No.		
aa :	1	:	Motor busy
	2	:	The cuvette wheel rotation motor is busy when downward operation starts
	3	:	The cuvette wheel stop position sensor(S57) turns off when downward operation starts
	4	:	The upper position sensor(S61) turns off after moving to the upper position
	5	:	The lower position sensor(S62) turns off after moving to the lower position
	6	:	The upper position sensor(S61) turns on after getting out of the upper position
	7	:	The lower position sensor(S62) turns on after getting out of the upper position.
bb :	Time table No.		
cc :	Phase No.		

3202 CUVETTE WASH DISABLED T (aa,bb,cc)

System Status
(1). The mode changes to STOP.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Any of the following will prevent the cleaning valve from opening.
Error details (Decimal)

T :	Time sequence No.		
aa :	1	:	The cuvette cleaning lower position check sensor(S61) turns off when the discharge valve opens
bb :	Time table No.		
cc :	Phase No.		

3203 CUVETTE WHEEL ROTATION ERROR T (aa,bb,cc)

System Status

(1). The mode changes to STOP.

Cause

(1). An error occurred while the cuvette wheel is rotating.

User Action

Contact Olympus Technical Support.

Additional Information

(1). An error occurs when the cuvette wheel is rotating.

Error codes (Decimal)

T : Time sequence No.

aa :

1	:	Motor busy
2	:	The cuvette cleaning motor is busy when operation starts
3	:	The S/R1 mixer-bar unit motor is busy when operation starts
4	:	The sample probe cuvette position sensor(S34) turn on and the sample agitation unit up / down motor is busy when operation starts
5	:	The R1 reagent probe cuvette position sensor(S43) turn on and the reagent agitation unit up / down motor is busy when operation starts
6	:	The cuvette cleaning upper sensor(S61) turn off when operation starts
7	:	The S/R1 mixer bar unit upper sensor(S60) turn off when operation starts
8	:	The sample probe cuvette position sensor turns on and the upper position sensor turns off when operation starts
9	:	The R1 reagent probe cuvette position sensor(S43) turns on and the upper position sensor(S46) turns off when operation starts
10	:	The cuvette wheel fails to rotate
11	:	The cuvette wheel stop position sensor(S57) turns off on completion of operation
12	:	The cuvette wheel origin sensor(S56) turns off after moving to the origin
13	:	The cuvette wheel origin sensor(S56) turns on after getting out of the origin
14	:	The cuvette wheel stop position sensor(S57) turns on after getting out of the origin
15	:	The R2 mixer-bar unit motor is busy when operation starts
16	:	The sample probe cuvette/origin position sensor(S34,S33) turn on and the sample agitation unit up / down motor is busy when operation starts
17	:	The R2 reagent probe cuvette position sensor(S115) turn on and the reagent agitation unit up / down motor is busy when operation starts
18	:	The R2 mixer bar unit upper sensor(S132) turn off when operation starts
19	:	The sample probe cuvette origin position sensor(S33) turns on and the upper position sensor turns off when operation starts
20	:	The R2 reagent probe cuvette position sensor(S115) turns on and the upper position sensor(S118) turns off when operation starts

bb : Time table No.

cc : Phase No.

3204 PHOTOMETER ERROR T (aa)

System Status
(1). During MEASURE or PHOTOCAL the mode changes to STOP.
Cause
(1). An error occurred in the photometry unit.
User Action
(1). Contact Olympus Technical Support.
Additional Information
Error details (Decimal)
T : Time sequence No.
aa : 1 : The photometry unit is busy after completion of photometry
2 : A / D error after completion of photometry

3205 PROBE WASHING DISPENSOR ERROR T (aa)

System Status
(1). During MEASURE or PHOTOCAL the mode changes to STOP.
Cause
(1). An error occurred the moving of the probe washing dispenser.
User Action
(1). Contact Olympus Technical Support.
Additional Information
Error details (Decimal)
T : Time sequence No.
aa : 1 : Motor busy
2 : The upper sensor(S134) turns off after moving to upward
3 : The down sensor(S135) turns off after moving to downward
4 : The upper sensor(S134) turns on after moving to upward
5 : The down sensor(S135) turns on after moving to downward

3206 LBF RACK EXIST $T

Under making

3212 STRONG DRAIN TANK FULL

System Status
(1). The mode changes to STOP (except during DIAG).
Cause
(1). The non-diluted waste liquid tank is full.
User Action
(1). Check for any crimped waste lines. The waste should drain automatically; confirm that the error clears.
(2). If not, check the connection of the non-diluted waste liquid float switch connector.

3213 WEAK DRAIN TANK FULL

System Status
(1). The mode changes to STOP (except during DIAG).
Cause
(1). The diluted waste liquid tank is full.
User Action
(1). Discharge diluted waste liquid and make sure that the error is cleared.
(2). If not, check connection of the diluted waste liquid float switch connector.

3214 R1 REAGENT SHORT (aaaaa,bb)

Cause
The R1 reagent for the test listed in the alarm is running low.
If additional bottles of the reagent are on board, the system will switch to them.
User Action
(1). Replenish the reagent.
Additional Information
(1). The R1 reagent quantity is below the programmed alarm level.
aaaaa : Item name
bb : Reagent position

3215 R2 REAGENT SHORT (aaaaa,bb)

Cause
The R2 reagent for the test listed in the alarm is running low.
If additional bottles of the reagent are on board, the system will switch to them.
User Action
(1). Replenish the reagent.
Additional Information
(1). The R2 reagent quantity is below the programmed alarm level.
aaaaa : Item name
bb : Reagent position

3216 R1 REAGENT EMPTY (aaaaaaaaaa,bbbbb,cc,dd)

System Status
An "R" is printed for the sample that generated the alarm.
The test will not be performed on any subsequent samples.
User Action
(1). Once the system returns to Stand-By, replenish the reagent.
(2). If the reagent volume is adequate, call Olympus Technical Support to check the status of the level sensor at its aspiration position.
Additional Information
(1). An R1 reagent level error occurs during MEASURE.
aaaaaaaaaa :Sample No.
bbbbb : Item name
cc : Reagent position
dd 1:The level detect sensor(S55) turn off on the completion of downward operation.
2:The effective value is short on the completion of downward operation.
3:The level detect sensor(S55) turn of on the completion of absorbing operation.
4:The level detect signal is latch on the completion of absorbing operation.

3217 R2 REAGENT EMPTY (aaaaaaaaaa,bbbbb,cc,dd)

System Status
An "R" is printed for the sample that generated the alarm.
The test will not be performed on any subsequent samples.
User Action
(1). Once the system returns to Stand-By, replenish the reagent.
(2). If the reagent volume is adequate, call Olympus Technical Support to check the status of the level sensor at its aspiration position.
Additional Information
(1). An R2 reagent level error occurs during MEASURE.
aaaaaaaaaa :Sample No.
bbbbb : Item name
cc : Reagent position
dd 1:The level detect sensor(S127) turn off on the completion of downward operation.
2:The effective value is short on the completion of downward operation.
3:The level detect sensor(S127) turn of on the completion of absorbing operation.
4:The level detect signal is latch on the completion of absorbing operation.

3218 INCUBATION BATH TEMP. ERROR

System Status
The system will not change modes from WARM-UP to STAND-BY.
Cause
(1). The temperature has not equilibrated in the allotted 20 minutes.
User Action
(1). Contact Olympus Technical Support.

3220 SAMPLE EMPTY LEVEL DETECT (aaaaaa,bb,cc,ddddd-ee)

System Status
Once this alarm is given, the sample will no longer be aspirated.
Cause
The sample level detector has not found any liquid.
User Action
(1). Confirm that adequate sample is present in the sample cup.
If there is adequate sample call Olympus Technical Support to check the status of the level sensor at the aspiration position.
Additional Information

aaaaaaa : Sample number
bb : Item number (1 to 99)
cc : Error details
- 1 : The liquid level sensor(S40) turns off when downward motion is completed at the sample aspirate position
- 2 : The number of remaining pulses is insufficient when downward motion is completed at the sample aspirate position
- 3 : The liquid level sensor(S40) turns off when aspiration is completed at the sample aspirate position
- 4 : The inactive liquid level sensor is latched when aspiration is completed at the sample aspirate position

ddddd : Rack No.
ee : Cup position (1 to 10)

3222 AUTOMATIC REPEAT BELT FEEDER JAM

System Status
The mode changes to STOP.
Cause
(1). A rack hasn't moved from the storage position to the rack unloading position.
User Action
(1). Check the rack feeder belts to determine the location of the rack jam.
(2). Contact Olympus Technical Support.

3232 AUTOMATIC REPEAT RECEIVER JAM

System Status
(1). Mode is no change.
User action
(1). Reset the machine following procedures described below.
1). If the alarm occurred during MEASURE, wait until MEASURE is finished. Then remove racks on the rack transfer belt.
2). Press STOP / STANDBY key.
3). Wait until the mode shifts to WARM UP or STAND BY.
(2). When restarting MEASURE, follow procedures described below.
1). Confirm the last sample using the data log list or the Data Edit menu.
2). Set unmeasured samples into racks or the Stat Rotor.
3). In the case of Sequential Requisition, set the first sample number as the start S.No. in the Start Condition menu.
(3). If this alarm occurs again, contact Technical Support. Department
Cause
(1). A rack is not transferred on the belt of the Rack Stocker correctly.
During the Auto Repeat Run, please do NOT remove the rack until the rack is transferred into the Rack Stocker.

3237 SAMPLE PROBE CLOT SENSOR ERROR T (aa)

System Status
Stop aspirating the sample and the mode changes to STOP.
User Action
(1). Contact Technical Support. Department.
Cause
(1). The clot sensor error is detected When aspirating a sample.
aa : 1: Clot sensor doesn't turn on
2: Clot sensor doesn't turn off

3238 CLOT SAMPLE DETECT (aaaaa,bb,ccccc-dd)

System Status
An "%" is printed for the sample that generated the alarm.
The aspirating of the sample will not be performed.
User Action
(1). Once the system returns to Stand-By, please check the error detected sample.
Cause
(1). The clot sample is detected When aspirating a sample.
aaaaaa : Sample no.
bb : Item name
ccccc : Rack No.
dd : Cup position (1 to 10)

3252 ANL <- DPR COM. ERROR-2 T (aa,bb)

System Status
(1). Mode is no change.
User Action
(1). Contact Technical Support. Department.
Cause
(1). During receiving the information from DPR to ANL, it is occurred a error.
T : Time sequence No.
aa : Text No.
bb : bit 0 : Illegal text length
: bit 1 : Unknown text
: bit 2 : Overwrite text

3253 DETERGENT A EMPTY

System Status
(1). If the alarm occurs while refilling detergent A, the detergent preparation pump stops.
(2). The mode changes to the WARM-UP or STAND-BY mode. The system will not start with this alarm.
(3). The mode changes to the STOP during measure mode.
(4). Detergent A preparation in DIAG is not executed.
Cause
(1). Diluted detergent B is low.
User Action
(1). Refill diluted detergent A and confirm that the ANL status error is reset. If it is not reset, check the connector of the non-diluted detergent float switch.

3254 DETERGENT B EMPTY

System Status
(1). If the alarm occurs while refilling detergent B, the detergent preparation pump stops.
(2). The mode changes to the WARM-UP or STAND-BY mode. The system will not start with this alarm.
(3). The mode changes to the STOP during measure mode.
(4). Detergent B preparation in DIAG is not executed.
Cause
(1). Diluted detergent B is low.
User Action
(1). Refill diluted detergent B and confirm that the ANL status error is reset. If it is not reset, check the connector of the non-diluted detergent float switch.

3255 ISE COVER OPEN

System Status
(1) Mode changes to STOP
(2) The sample aspirating is stop and Mode changes to STOP during measure.
User Action
(1).Close the ISE cover.
(2) IF ISE cover is close ,Contact Technical Support Department.
Cause
(1). The ISE cover is open when Sample probe is moving to the position of ISE/STAT aspirating position

3256 STAT COVER OPEN

System Status
(1). Mode changes to STOP
(2) The sample aspirating is stop and Mode changes to STOP during
User Action
(1). .Close the STAT cover.
(2) IF STAT cover is close ,Contact Technical Support Department.
Cause
(1). The STAT cover is open when Sample probe is moving to the position of ISE/STAT aspirating position

3257 STAT SET OVER TIME

System Status
(1).Mode changes to Pause.
User Action
(1). Restart measure with STAT SET switch.
If END LED is turned on a light, you must remove all of STAT samples
except RB/QC/ACAL samples before restart..
Cause
(1). Measurement for STAT Samples are interrupted by use of STAT SW
and then Measurement for all of the Sample (already aspirated) are
finished. .(STAT SET LED turn on a light)
Please Re-start the Measurement for STAT Samples as fast as you can ,
after interruption of STAT .

3258 AUTO REPEAT RUN RACK DISABLED
System Status
Mode change to PAUSE
User Action
(1). .Restart measure.
Cause
(1). Auto repeat run rack is getting the recovering timing during measure-2.

3260 R2 REAGENT EMPTY (aaaaa,bb,cc)
System Status
The test will not be performed on any subsequent samples.
User Action
(1). Once the system returns to Stand-By , replenish the reagent.
Cause
(1). Error occurs during MEASURE, when R2 reagent rest volume is 0
aaaaa : Sample number
bb : Item number (1 to 99)
cc : Reagent position(1 to 48)

3264 REAGENT TRANSPOSITION DISABLED (aa)
System Status
The test will not be performed on any subsequent samples.
User Action
(1). Once the system returns to Stand-By , replenish the reagent.
Cause
(1). Error occurs during MEASURE, when Reagent volume is not enough for the measure of reagent blank/calibration.
aa : Item number (1 to 99)

3266 QC SAMPLE PROHIBITED
System Status
STAT QC is not measuring.
User Action
(1).Executing the STAT QC after finishing the measuring RB/ACAL/STAT/QC
Cause
(1). Request to measure STAT QC during the measuring of STAT QC

3267 MEASURE RESTART DISABLE
System Status
(1) The mode is no change.
User Action
(1).Executing the start of Measure with STAT SET switch.
If STAT END LED is turned on a light, you must remove all of STAT
samples except RB/ACL/QC samples.
Cause
(1). Measurement for RB/ACAL/QC samples on STAT table are interrupted by use of STAT SW. (SET LED is turned on a light)
(2). Measurement for RB/ACAL/QC samples on STAT table occurs ,during STAT SET status.(SET LED is turned on a light)

3268 R1 REG. PROBE DETERGENT SHORT (CLN-aa,bb)
System Status
This is an advisory alarm.
Cause
(1). Detergent solution in the R1 tray is low.
User Action
(1). Replenish the detergent solution supply. If the bottle has sufficient standard, contact Technical Support Department to check the sensor.
aa : The kind of detergent
bb : Reagent position(1 to 48)

3269 R1 REG. PROBE DETERGENT EMPTY (CLN-aa,bb)
System Status
(1). Measure is continue
(2). It is washed with water instead of the detergent.
Cause
(1). Detergent solution in the R1 tray is empty.
User Action
(1). Replenish the detergent solution supply. If the bottle has sufficient standard, contact Technical Support Department to check the sensor.
aa : The kind of detergent
bb : Reagent position(1 to 48)

3270 R2 REG. PROBE DETERGENT SHORT (CLN-aa,bb)
System Status
This is an advisory alarm.
Cause
(1). Detergent solution in the R2 tray is low.
User Action
(1). Replenish the detergent solution supply. If the bottle has sufficient standard, contact Technical Support Department to check the sensor.
aa : The kind of detergent
bb : Reagent position(1 to 48)

3271 R2 REG. PROBE DETERGENT EMPTY (CLN-aa,bb)
System Status
(1). Measure is continue
(2). It is washed with water instead of the detergent.
Cause
(1). Detergent solution in the R2 tray is empty.
User Action
(1). Replenish the detergent solution supply. If the bottle has sufficient standard, contact Technical Support Department to check the sensor.
aa : The kind of detergent
bb : Reagent position(1 to 48)

3272 RACK BUFFER UNIT ERROR (aa,bb,cc)

System Status
(1). Mode changes to STOP
(2) The sample aspirating is stop and Mode changes to STOP during
User Action
(1) Contact Technical Support Department.
Cause
(1). The error is occurred when Rack recovery is moving
Additional Information
aa : Error details
1 : The motor is busy
2 : The origin sensor(S107) turns off after moving to the origin sensor.
3 : The rack recovery position sensor(S109) turns off after moving to the recovery position.
4 : The repeat position sensor(S110) turns off after moving to the repeat recovery position.
5 : The origin sensor(S107) turns on after moving out of the origin position.
6 : The unloading position sensor(S109) turns on after moving to the origin position.
7 : The unloading position sensor(S110) turns on after moving to the repeat position.
8 : The rack unload is busy when moving to the unload/repeat position.
9 : The rack unload sensor(S24) turns off when moving to the unload/repeat position.
bb : Time table No.
cc : Phase No.

3273 RACK BUFFER STOPPER ERROR T (aa,bb,cc)

System Status
(1). Mode changes to STOP
(2) The sample aspirating is stop and Mode changes to STOP during
User Action
(1) Contact Technical Support Department.
Cause
(1). The error is occurred when Rack recovery is moving
Additional Information
aa : Error details
1 : The motor is busy
2 : The origin sensor(S107) turns off after moving to the origin sensor.
3 : The rack recovery position sensor(S109) turns off after moving to the recovery position.
4 : The repeat position sensor(S110) turns off after moving to the repeat recovery position.
5 : The origin sensor(S107) turns on after moving out of the origin position.
6 : The unloading position sensor(S109) turns on after moving to the origin position.
7 : The unloading position sensor(S110) turns on after moving to the repeat position.
8 : The rack unload is busy when moving to the unload/repeat position.
9 : The rack unload sensor(S24) turns off when moving to the unload/repeat position.
bb : Time table No.
cc : Phase No.

3274 RACK BUFFER COVER OPEN
System Status
(1). Mode changes to STOP
(2) The sample aspirating is stop and Mode changes to STOP during
User Action
(1). .Close the Rack Buffer cover.
(2) IF Rack buffer cover is close ,Contact Technical Support Department.
Cause
(1). The Rack buffer cover is open when Rack is moving.

3275 R1 REAGENT EMPTY T (aaaaa,bb,cc)
System Status
The test will not be performed
User Action
(1) If there are not another filled up reagent bottle, once the system returns to Stand-By, replenish the reagent bottle.
(2) If the reagent volume is adequate, call Olympus Technical Support.
Cause
R1 reagent rest volume is getting empty in the middle of measuring the Advanced RB/ACAL/QC samples.
Additional Information
T : Time Sequence No.
aaaaa : Sample number
bb : Item number (1 to 96)
cc : Reagent position(1 to 76)

3276 LBF RACK FEED DISABLE (aa,bb,cc,dd)
System Status
The rack supplied from LBF stay on the AU rack supplier
User Action
Clear away the error indicated on this alarm then measurement will be restarted automatically.
Cause
Measurement cannot be restarted because of some errors.
Additional Information
Error codes (Hex)
aa : Cover open
bit 0 : R1
bit 1 : STAT
bit 2 : ISE
bit 3 : R2
bit 4 : Rack receiver
bb : Solution empty
bit 0 : DI water
bit 1 : Detergent A
bit 2 : Detergent B
bit 3 : Diluted detergent A
bit 4 : Diluted detergent B
cc : Tank full
bit 0 : Air vacuum
bit 1 : Diluted waste
bit 2 : Conc. waste
dd : Rack exist
bit 0 : Rack exist at the end of receiver (Rack full)

3301 NO ISE
Cause
There has been a complete loss of communications with the ISE.
User Action

Contact Olympus Technical Support.
Additional Information
(1). The ISE power is turned off.
(2). Check the source voltage of the ISE and connector between the ANL control board and ISE control board.

3302 ISE INITIAL ERROR (aa)

Cause
There has been a loss of communications with the ISE.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connector between the ANL control board and ISE control board.
(2). Any of the following errors occurs in the ISE :
Error details
aa : bit 0 : The check sum of the IPL block of the ISE FROM is not correct
bit 1 : The check sum of the control block of the ISE FROM is not correct
bit 2 : Data cannot be read or written from / into the ISE RAM
bit 3 : An error occurs in ISE's pulse motor control 1
bit 4 : An error occurs in ISE's pulse motor control 2
bit 6 : The ISE does not get ready
bit 7 : The ISE cannot transmit or receive an ANL message properly in ISE communication check
(It considers it is not A55A.)

3303 ISE MID STANDARD SHORT

System Status
This is an advisory alarm.
Cause
(1). The Mid-Standard solution in the ISE is low.
User Action
(1). Replenish the ISE Mid Standard supply. If the bottle has sufficient standard, contact Technical Support Department to check the sensor.

3304 ISE BUFFER SHORT

System Status
An advisory alarm is given.
Cause
(1). The ISE Buffer is low.
User Action
(1). Replenish the ISE Buffer supply. If there is sufficient buffer, contact Technical Support Department .

3305 ISE REFERENCE SHORT
System Status
An advisory alarm is given.
Cause
(1). The ISE Reference solution is insufficient.
User Action
(1). Replenish the ISE Reference supply. If there is sufficient solution, contact Olympus Technical Support to check the sensor.

3306 ISE CLEANING SOLUTION SHORT
System Status
The system interrupts the cleaning cycle.
Cause
(1). The cleaning solution in the ISE is insufficient.
User Action
(1). Refill the ISE cleaning solution cup. If it appears sufficient, contact Olympus Technical Support to check the level sensor at the aspiration position.

3307 ISE STANDARD L SHORT
System Status
The system will stop calibration.
Cause
(1). The external low standard of the ISE is insufficient.
User Action
(1). Refill the Low Standard cup and repeat calibration.
(2). If the error recurs, contact Olympus Technical Support to check the level sensor at the aspiration position.

3308 ISE STANDARD H SHORT
System Status
The system will stop calibration.
Cause
(1). The external high standard of the ISE is insufficient.
User Action
(1). Refill the High Standard cup and repeat calibration.
(2). If the error recurs, contact Olympus Technical Support to check the level sensor at the aspiration position.

3309 ISE SELECTIVITY CHECK(Na) SHORT
System Status
The system will stop calibration.
Cause
(1). The amount of NA Selectivity solution is insufficient.
User Action
(1). Refill the NA Selectivity cup and repeat selectivity check.
(2). If the error recurs, contact Olympus Technical Support to check the level sensor at the aspiration position.

3310 ISE SELECTIVITY CHECK(K) SHORT
System Status
The system will stop calibration.
Cause
(1). The amount of K Selectivity solution is insufficient.
User Action
(1). Refill the K Selectivity cup and repeat selectivity check.
(2). If the error recurs, contact Olympus Technical Support to check the level sensor at the aspiration position.

3311 ISE LOW DATA

System Status
If "Move to stop" is specified in the System Maintenance, the mode changes into the STOP mode.
Cause
(1). The ISE values of three consecutive NA samples are 70 or less.
User Action
(1). If the sample probe is clogged, replace it using the MAINTENANCE function.
If the sample probe is clear, prime the standards, recalibrate the ISE, and check the slope.
(2). If the slopes are out of range, check the thermistor under DIAG.
If the DIAG results fail, replace the thermistor.
If the DIAG results are OK, replace the electrode.

3313 ISE SAMPLE No. ILLEGAL PROCEDURE (aaaa)

System Status
The ISE stops.
Cause
(1). A sample number sent to the ISE is different from a sample number contained in requisition data.
User Action
(1). Contact Olympus Technical Support.
Additional Information
aaaa : Inquired sample number (2-byte BCD)

3314 ANL <- ISE COM. ERROR (aa,bb)

System Status
The ISE stops.
Cause
(1). An error occurs when the ANL receives a message from the ISE.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connectors of the ANL control board and ISE control board .
aa : Message number
Error details
bb : bit 0 : Message length error
bit 1 : Communication is not completed within time from STX to BCC
bit 2 : BCC error
bit 3 : No ETX
bit 4 : Framing error
bit 5 : Over-run error
bit 6 : Undefined message
bit 7 : Message overwriting

3315 ANL <- ISE TEXT NOT RECEIVED (aa,bb)

System Status
The ISE stops.
Cause
(1). The ANL cannot receive a message from the ISE.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connectors of the ANL control board and ISE control board .
aa : Message number
bb : Detail of operation command ("0" if non-received message is not an operation response.)

3316 ANL -> ISE COM. RECEPTION ERROR (aa,bb)
System Status
The ISE stops.
Cause
(1). An error occurs when the ANL transmits a message to the ISE.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connectors of the ANL control board and ISE control board.
aa : Message number
Error details
bb : bit 0 : An ENQ response is not received in time
bit 2 : A transmission response is not received in time
bit 4 : One character is not transmitted in time

3351 ISE <- ANL COM. ERROR (aa,bb)
System Status
The ISE stops.
Cause
(1). An error occurs when the ISE receives a message from the ANL.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connectors of the ANL control board and ISE control board.
aa : Message number
Error details
bb : bit 0 : Message length error
bit 1 : Communication is not completed within time from STX to BCC
bit 2 : BCC error
bit 3 : No ETX
bit 4 : Framing error
bit 5 : Over-run error
bit 6 : Undefined message
bit 7 : Message overwriting

3352 ISE <- ANL TEXT NOT RECEIVED (aa,bb)
System Status
The ISE stops.
Cause
(1). The ISE cannot receive a message from the ANL.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connection of the connectors of the ANL control board and ISE control board.
aa : Message number
bb : Details of operation command ("0" if non-received message is not an operation response.)

3353 ISE SEQUENCE ERROR T
System Status
The ISE stops.
Cause
(1). The ISE receives sample data before the processing of the previous sample is completed.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connection of connectors of the ANL control board and ISE control board.
T : Time sequence No.

3354 ISE SYNC SIGNAL ERROR T (aa,bb,cc,dd,ee,ff,gg)
System Status
The ISE stops.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). The interval of the ISE synchronization signal is less than 18 seconds.
Error details
aa : ISE command 1
bb : ISE command 2

3355 ISE A/D ERROR T (aa)
System Status
The ISE stops.
Cause
(1). ISE analog to digital conversion error.
User Action
(1). Contact Olympus Technical Support.
Additional Information
Error details
aa : 1 : EOC is not completed in time
2 : Error in transmission from A / D to CPU

3356 ISE TEMP. ERROR (aa)
System Status
The ISE stops.
Cause
(1). An error occurred with the thermistor of the ISE.
User Action
(1). Replace the thermistor.
Additional Information
Error details
aa : 1 : The thermistor wire is broken
2 : The temperature is above or below the allowable range

3357 ISE BUFFER DISPENSER ERROR T (aa)

System Status
The ISE stops.
User Action
(1). Contact Olympus Technical Support.
Cause
(1). An error occurred in the ISE buffer pump.
Additional Information
(1). If error detail data is 1, replace the ISE control board.
(2). If it is 3 to 8, refer to the LED on the boards to check the sensor.
Error details
T : Time sequence No.
aa : 1 : OPMC busy
2 : Motor busy
3 : The upper position sensor turns on after discharging
4 : The lower position sensor turns off after aspiration
5 : The upper position sensor turns off after moving to the upper position
6 : The lower position sensor turns on after moving to the upper position
7 : The upper position sensor turns on after getting out of the upper position
8 : The lower position sensor position turns off after moving to the lower position

3358 ISE MID STANDARD PUMP ERROR T (aa)

System Status
The ISE stops.
Cause
(1). An error occurred in the ISE internal mid-standard pump.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). If error detail data is 1, replace the ISE control board.
Error details
T : Time sequence No.
aa : 1 : OPMC busy
2 : Motor busy

3359 ISE SAMPLE ASPIRATION PUMP ERROR T (aa)

System Status
The ISE stops.
Cause
(1). An error has occurred in the ISE sample aspirate pump.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). If error detail data is 1, replace the ISE control board.
Error details
T : Time sequence No.
aa : 1 : OPMC busy
2 : Motor busy

3360 ISE SAMPLE MIXER ERROR T (aa)
System Status
The ISE stops.
Cause
(1). An error occurred in the ISE sample agitation motor.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). If error detail data is 1, replace the ISE control board.
Error details
T : Time sequence No.
aa : 1 : OPMC busy
2 : Motor busy

3361 ISE D-POT OVERFLOW SENSOR ERROR T (aa)
System Status
The ISE stops.
Cause
(1). Liquid overflows the ISE dilution pot.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the overflow sensor using the ISE DIAG function.
Refer to LED DS6 on the ISE control board to check the sensor condition.
Error details
T : Time sequence No.
aa : 1 : Overflow
2 : The overflow sensor turns off on checking

3362 ISE -> ANL COM. RECEPTION ERROR (aa,bb)
System Status
The ISE stops.
Cause
(1). An error occurred while the ANL was receiving a message from the ISE.
User Action
(1). Contact Olympus Technical Support.
Additional Information
(1). Check the source voltage of the ISE and connection of the connector of the ANL control board and ISE control board .
aa : Message number
Error details
bb : bit 2 : A communication response was not received in time

4001 NO SAMPLE CUP (aaaaa-bbbbb-cc) ddddddddd
System Status
(1). No sample cup has been detected for the sample ordered.
User Action
(1). Verify the test assays selected on the test requisition menu.
Cause
(1). No sample cup is detected though there is a test requisition ordered for the sample generating the alarm.
aaaaa : Sample No.
bbbbb : Rack number
cc : Cup position (1 to 10)
ddddddddd : Sample ID

4002 SAMPLE NOP (aaaaa-bbbbb-cc) ddddddddd
System Status
(1). Default panel is requested for the sample generating the alarm.
User Action
(1). Verify that test items have been selected for the sample.
Cause
(1). No tests have been requisitioned for the sample.
aaaaa : Sample number
bbbbb : Rack number
cc : Cup position 1-10
ddddddddd : Sample ID

4003 SAMPLE ID NOT FOUND (aaaaa,bbbbb,cc) ddddddddd
System Status
(1). Preset default panel of tests is requested for the sample generating the alarm.
Cause
(1). Unable to locate requisition for the sample id detected.
Error detail
aaaaa : Sample ID
bbbbb : Rack No.
cc : Cup position or STAT position
ddddddddd : Sample ID

4004 REPEAT SAMPLE ID NOT FOUND (aaaaa-bbbb-cc)
System Status
(1). No MEASURE is carried out.
Cause
(1). There are no test requisitioned for the repeat sample id detected.
Error detail
aaaaa : Sample ID.
bbbb : Rack No.
cc : Cup position or STAT position

4005 REPEAT SAMPLE NOP (aaaaa-bbbbb-cc)
System Status
(1). No MEASURE is carried out.
Cause
(1). There are no tests requisitioned for the repeat sample.
Error detail
aaaaa : Sample No.
bbbbb : Rack No.
cc : Cup position or STAT position

4006 ILLEGAL SAMPLE ID (aaaaa-bbbbb)
System Status
(1). When the alarm is generated, communication between the analyzer and DPR is discontinued and the system moves to the STOP mode.
User Action
(1). Contact Olympus Technical Support.
Cause
(1). Sample No. requested by the analyzer does not match the sample No. sent by the DPR.
Error detail
aaaaa : Requested sample No. from ANL
bbbbb : Responded sample No. from DPR

4008 BROKEN LABEL (aaaaa-bbbbb-cc)
System Status
(1). The sample with the same bar code is not measured.
Cause
(1). The same bar code is read for two consecutive sample cups.
Error detail
aaaaa : Sample No.
bbbbb : Rack No.
cc : Cup position or STAT position

4009 REPEAT BROKEN LABEL (aaaaa-bbbbb-cc)
System Status
(1). The repeat sample with the same bar code is not measured.
Cause
(1). The same bar code is read for two consecutive repeat sample cups.
Error detail
aaaaa : Sample No.
bbbbb : Rack No. or STAT table No.
cc : Cup position or STAT position

4010 SAMPLE ID READ ERROR (aaaaa-bbbbb-cc)
System Status
(1). Default panel test items are selected for the sample.
User Action
(1). Verify proper placement of label on tube.
(2). Verify label type and condition.
Cause
(1). The sample bar code label cannot be read.
Error detail
aaaaa : space
bbbbb : Rack No.
cc : Cup position (1 to 10) or STAT position

4011 REPEAT SAMPLE ID READ ERROR (aaaaa-bbbbb-cc)
System Status
(1). The sample that generates the alarm is not measured.
Cause
(1). Rerun sample ID could not be read.
(2). The display of [ ] and its meaning as follows.
aaaaa : Space
bbbbb : Rack No.
cc : Cup position or stat position

4012 MEASURE COMPLETED FOR THE READ SAMPLE ID (aaaaa-bbbbb-cc) ddddddddd

System Status
(1). An advisory alarm is given.
(2). The sample is measured again.
Cause
(1). Sample ID read has already been run.
(2). The display of [ ] and its meaning as follows.
aaaaa : Space
bbbbb : Rack No.
cc : Cup position or stat position
ddddddddd : Sample ID

4013 CALIBRATION FACTOR RANGE OVER (aaaaa) c
System Status
(1). The calibration curve is not updated.
User Action
(1). Verify calibration factor range.
(2). Verify proper calibrator position and reagent position.
(3). Verify the integrity of the calibrator material.
Cause
(1). The factor found for drawing a calibration curve in type AB calibration is over the set range.
Error detail
aaaaa : Item name
c : Sample type (serum: space urine:U other:X)

4014 CALIBRATION FACTOR RANGE UNDER (aaaaa) c
System Status
The calibration curve is not updated.
User Action
(1). Verify the calibration factor range parameters.
(2). Verify the position of the calibrator and reagent.
(3). Verify the calibrator integrity.
Cause
(1). The factor found for drawing a calibration curve in type AB calibration is below the set range.
Error detail
aaaaa : Item name
b : Sample type (serum: space urine:U other:X)

4015 CALIBRATION OD RANGE OVER (aaaaa) b,c
System Status
(1). The calibration curve is not updated.
User Action
(1). Verify calibrator parameters.
(2). Verify the position of the calibrator and reagents.
(3). Verify the integrity of the calibrator.
Description
(1). The factor found for drawing a calibration curve in multi-point calibration is over the set range.
Error detail
aaaaa : Item name
b : calibration point (1 to 7)
c : Sample type (serum: space urine:U other:X)

4016 CALIBRATION OD RANGE UNDER (aaaaa) b c
System Status
(1). The calibration curve is not updated.
User Action
(1). Verify calibration parameters.
(2). Verify calibrator and reagent positions.
(3). Verify calibrator integrity.
Cause
(1). The factor found for drawing a calibration curve in multi-point calibration is under the set range.
Error detail
aaaaa : Item name
b : calibration point (1 to 7)
c : Sample type (serum: space urine:U other:X)

4017 CALIBRATION ERROR (aaaaa) c
System Status
(1). The calibration curve is not updated.
User Action
(1). Verify the calibrator and reagent positions.
(2). Verify the integrity of the calibrator.
Cause
(1). The calibration curve in multi-point calibration cannot be drawn.
Error detail
aaaaa : Item name

4018 QC DATA RANGE OVER (aaaaa,bb,ccccc,d) eeeeeeeee

System Status
(1). An error flag is added to the printout data.
User Action
(1). Verify the QC range parameters.
(2). Verify the positioning of the QC material.
(3). Verify the integrity of the QC material.
Cause
(1). QC data is over the set range.
Error detail
aaaaa : Sample No.
bb : QC control No.
ccccc : Item name
eeeeeeeee : Control ID

4019 QC DATA RANGE UNDER (aaaaa,bb,ccccc,d) eeeeeeeee
System Status
(1). An error flag is added to the printout data.
User Action
(1). Verify the QC range parameters.
(2). Verify the positioning of the QC material.
(3). Verify the integrity of the QC material.
Cause
(1). QC data is below the set range.
Error detail
aaaaa : Sample No.
bb : QC control No.
ccccc : Item name
d : Sample type (serum: space urine:U other:X)
eeeeeeeee : Control ID

4020 QC DATA CHECK ERROR (aaaaa,bb,ccccc,d) eeeeeeeee
System Status
(1). An error flag is added to the printout data.
User Action
(1). Verify QC parameters.
(2). Verify the integrity of the QC material.
Cause
(1). The QC data causes QC multi-check error.
Error detail
aaaaa : Sample No.
bb : QC control No.
ccccc : Item name
d : Sample type (serum: space urine:U other:X)
eeeeeeeee : Control ID

4021 PANIC VALUE (aaaaa,bbbbb,cc,dd) eeeeeeeee

System Status
(1). An error flag is added to the printout data.
Description
(1). The data is over or below the set panic range.
Error detail
aaaaa : Sample No.
bbbbb : Rack ID
cc : Cup position (1 to 10) 1 to 22 for stat sample
dd : Item name
eeeeeeeee : Control ID

4023 PHOTCAL DATA ERROR

System Status
(1). A system status alarm is generated.
(2). Samples are measured but data maybe questionable.
User Action
(1). Perform photocal and recheck cuvette status.
(2). Clean / Replace cuvettes that do no pass photocal.
If a large number of cuvettes fail, check for flooding of the cuvette wheel.
Cause
(1). Some cuvettes did not pass the photocal.

4024 REAGENT REF. TEMPERATURE LOW

System Status
(1). A system status alarm is generated.
(2). Samples can be measured but the data is questionable.
User Action
(1). Perform end process and re-boot the system.
(2). Call Olympus Technical Support.
Cause
(1). The temperature of the reagent refrigerator is below the specified temperature.

4025 REAGENT REF. TEMPERATURE HIGH

System Status
(1). A system status alarm is generated.
(2). Samples can be measured but the data is questionable.
User Action
(1). Perform end process and re-start the system.
(2). Call Olympus Technical Support.
Cause
(1). The temperature of the reagent refrigerator is over the specified temperature.

4026 INCUBATION BATH TEMPERATURE HIGH

System Status
(1). A system status alarm is generated.
(2). Samples can be measured but the data is questionable.
User Action
(1). Perform the end process and re-start the system.
(2). Call Olympus Technical Support.
Cause
(1). The temperature of the incubation bath is over the specified temperature.

4027 INCUBATION BATH TEMPERATURE LOW
System Status
(1). A system status alarm is generated.
(2). Samples can be measured but the data is questionable.
User Action
(1). Perform end process and re-start the system.
(2). Call Olympus Technical Support.
Cause
(1). The temperature of the incubation bath is below the specified temperature.

4028 STAT SAMPLE MEASURE START CANCELED
System Status
(1). The STAT sample cannot be measured.
User Action
(1). Verify the stat sample requested.
Cause
(1). The STAT module transmits a negative message in response to a request sent by the analyzer.

4029 DPR <-> ANL COM. START TIMEOUT
System Status
(1). The communication to the analyzer is discontinued.
The system changes to the STOP mode.
User Action
(1). Verify proper placement of communication cables.
(2). Perform end process and re-start the system.
(3). Call Olympus Technical Support.
Cause
(1). Analyzer does not respond to DPR in the allotted time frame when starting communication with the analyzer.

4030 DPR <-> ANL COM. TIMEOUT (aa)
System Status
(1). System status depends on the condition.
User Action
(1). Verify proper placement of the communication cables.
(2). Perform the end process and re-start the system.
(3). Call Olympus Technical Support.
Cause
(1). Analyzer does not respond in the specified time frame upon start of communication.
Error detail
aa : Number of a message to be transmitted

4031 ILLEGAL PARAMETER (aaaaa,b,c,d,e)
System Status
(1). Cannot start operation.
User Action
(1). Review the parameter menu generating the alarm.
(2). Correct the parameter generating the alarm.
(3). If the alarm is generated but parameters are correct, contact Olympus Technical Support.
Cause
(1). There is an improper entry in the parameter specified.
(2). The display in ( ) and its meaning is as follows.
aaaaa : Parameter menu having improper entry
b, c, d, e : Error Information

4035 NO SAMPLE REQUISITION (aaaaa)
System Status
(1). System moves to the next sample.
Cause
(1). No tests have been requested for the sample generating the alarm.
(2). The display in the ( ) and its meaning is as follows.
aaaaa : Sample No. having this error

4036 DATA WRITE DISABLED (aaaaa)
System Status
(1). Data is not automatically rewritten.
Cause
(1). Before rewriting the data of a sample, the analyzer sends the information to the DPR to be saved and reviewed without deleting the existing data.
(2). The display in the ( ) and its meaning is as follows.
aaaaa : Sample No. having this error

4038 STAT TABLE TEMPERATURE HIGH
System Status
(1). A system status alarm is generated.
(2). Samples can be measured but the data is questionable.
User Action
(1). Perform the end process and re-start the system.
(2). Call Olympus Technical Support.
Cause
(1). The temperature of the STAT table is under the specified temperature.

4039 STAT TABLE TEMPERATURE LOW
System Status
(1). A system status alarm is generated.
(2). Samples can be measured but the data is questionable.
User Action
(1). Perform the end process and re-start the system.
(2). Call Olympus Technical Support.
Cause
(1). The temperature of the STAT table is over the specified temperature.

4040 SAMPLE BLANK CORRECTION WITHOUT COLOR DATA (aaaaa-bbbbb-cc ddddd eeeee) fffffffff

System Status
(1). The result of sample blank test is not output.
Cause
(1). The color test was not analyzed.
Error detail
aaaaa : Sample No.
bbbbb : Rack No.
cc : Cup position
ddddd : Color Test Name
eeeee : Blank Test Name
fffffffff : Sample ID

4041 SAMPLE BLANK CORRECTION WITHOUT BLANK DATA (aaaaa-bbbbb-cc ddddd eeeee) fffffffff

System Status
(1). The result of sample blank test is not output.
Cause
(1). The blank test was not analyzed.
Error detail
aaaaa : Sample No.
bbbbb : Rack No.
cc : Cup position
ddddd : Color Test Name
eeeee : Blank Test Name
fffffffff : Sample ID

4042 STAT SAMPLE MEASURE START ERROR

System Status
(1). There were some errors when you performed measure start with STAT switch. And the errors was displayed in error list of Start Window.
User Action
(1). Check the errors, which is displayed in Start Window.
(2). Eliminate the errors as the need.
Cause
(1). There were some errors when you performed measure start with STAT switch.

4051 REPEAT SAMPLE NO CUP (aaaaa-bbbbb-cc)

System Status
(1). The analyzer sends a NOP error and continues MEASURE mode.
Cause
(1). In the automatic repeat run mode, there are no sample cups detected even though the rack number and cup position indicate that a sample cup should be present for repeat analysis.
Error detail
aaaaa : Original Sample No.
bbbbb : Rack No.
cc : Cup position

4052 ILLEGAL REPEAT SAMPLE ID (aaaaa)

System Status
(1). The analyzer sends a NOP alarm and continues MEASURE mode.
Cause
(1). In automatic repeat run mode, the bar code ID read for the repeat sample does not match an ID contained in the sample IDs calculated from the sample type, rack number and cup position assigned by the ANL.
Error detail
aaaaa : Repeat run sample ID

4053 MAXIMUM NUMBER OF SAMPLE (aa) bbbbbbbbb

System Status
(1). The system moves to the Measure 2 mode.
User Action
(1). Change the index.
Cause
(1). The number of samples reaches the maximum in the M1 mode, or the sample number reaches the upper limit.
Error detail
aaaaa : S.No. having reached the upper limit
bbbbbbbbb: Sample ID

4055 Can't calculate Sample No. of this Rack No. (aaaaa-bb)
System Status
(1). The system moves to the Measure 2 mode.
User Action
(1). Confirm the rack ID and Rack No. Limit in [Parameter][System][System] menu. If you find that sample No. can not calculate because of wrong rack ID or wrong Rack No. Limit, correct them.
Cause
(1). In the case of Rack ID analysis, sample No. can not be calculated based on Rack No.
Error detail
aaaaa : Rack No.
bb : Cup position (1 to 10)

4057 NO TESTS REQUISITIONED (aaaaa-bbbbb-cc) ddddddddd
System Status
(1). System moves to the next sample without analyzing the sample.
User Action
(1). After requesting tests or confirm tests being requisitioned in HOST, re-run the sample according to the necessity.
(2). In the case of Sequential Requisition, set the start S.No. in the Start Condition menu for the system to process the sample as the correct S.No.
Cause
(1). There are no tests requisitioned for the sample generating the alarm even after receiving the test requisition information text using online or being requested according to default panel.
Error detail
aaaaa : Sample No.
bbbbb : Rack No.
cc : Cup position
ddddddddd : Sample ID

4058 LBF RACK FEED DISABLE
System Status
(1). The rack supplied from LBF stay on the AU rack supplier
User Action
(1). Perform feeder stop and restart according to necessity.
Cause
(1). The DPR has sent a instruction to the analyzer when receiving a request to restart. Therefore, measurement cannot be restarted
4101 NO STAT CUP (CALIBRATION NO. aa bb)
System Status
(1). STAT check is going to OK
(2). If measure start, the STAT calibration of the displayed calibrator No. is not performed.
User Action
(1). Check the calibrator sample cups on STAT table whether the parameter of STAT calibration is same..
(2). If not needed this calibration, don't care.
(3). If the calibrator setting is correct, contact Technical Support Department.
Cause

(1). Not enough STAT Calibrator on STAT table.
Error detail
aa : Calibrator No. (1-80)
bb : Position No. of STAT table (1-22)
Cup position is displayed in checking whether there are the cups in measure start with STAT switch in Calibrator Barcode Operation.

4101 NO STAT CUP (CALIBRATION NO. aa bb)

System Status
(1). STAT check is going to OK
(2). If measure start, the STAT calibration of the displayed calibrator No. is not performed.
User Action
(1). Check the calibrator sample cups on STAT table whether the parameter of STAT calibration is same..
(2). If not needed this calibration, don't care.
(3). If the calibrator setting is correct, contact Technical Support Department.
Cause
(1). Not enough STAT Calibrator on STAT table.
Error detail
aa : Calibrator No. (1-K0)
bb : Position No. of STAT table (1-22)
Cup position is displayed in checking whether there are the cups in measure start with STAT switch in Calibrator Barcode Operation.

4102 NO STAT CUP (CONTROL NO. aa bb)

System Status
(1). STAT check is going to OK
(2). If measure start, the STAT QC of the displayed QC No. is not performed.
User Action
(1). Check the QC sample cups on STAT table whether the parameter of STAT QC is same..
(2). If not needed this QC, don't care.
(3). If the calibrator setting is correct, contact Technical Support Department.
Cause
(1). Not enough STAT QC on STAT table when operation the STAT check operations
Error detail
aa : QC No.
bb : Position No. of STAT table (1-22)
Cup position is displayed in checking whether there are the cups in measure start with STAT switch in Barcode QC Operation.

4103 STAT CAL/QC DUPLICATE ID (aaaaa) bb

System Status
(1). STAT check is going to OK
(2). If measure start, the STAT CAL/QC of the displayed CAL/QC bar-code . is not performed.
User Action
(1). Check the bar-code label of CAL/QC sample cups on STAT table whether the parameters of STAT CAL/QC is same..
(2). If not needed this CAL/QC, don't care.
(3). If the calibrator setting is correct, contact Technical Support Department.
Cause
(1). There are same bar-code of STAT CAL/QC on STAT table when operation the STAT check operations
Error detail
aaaaa : ID. (max. 20)
bb : Position No. of STAT table (1-22)

4104 STAT CAL/QC ID READ ERROR (aa)
System Status
(1). STAT check is going to OK
(2). If measure start, the STAT CAL/QC of the displayed position of CAL/QC samples is not performed.
User Action
(1). Check the bar-code label of CAL/QC sample cups on STAT table .
(2). If not needed this CAL/QC, don't care.
(3). If the calibrator setting is correct, contact Technical Support Department.
Cause
(1). Bar-code reading error occurs according STAT CAL/QC on STAT table when operation the STAT check operations
Error detail
aa : Position No. of STAT table (1-22)

4105 NO STAT CUP (RB)
System Status
(1). STAT check is going to OK
(2). If measure start, the STAT RB/calibration is not performed.
User Action
(1). Check whether the RB sample cup exists in the correct position on STAT table.
(2). If not need RB, don't care.
(3). If the RB setting is correct, contact Technical Support Department.
Cause
(1). Not exist RB on STAT table.

4106 INVALID STAT CUP (CALIBRATION NO. aa)
System Status
(1). If measure start, the STAT calibration of the displayed calibrator No. is not performed.
User Action
(1). Check whether the calibrator sample cups existed on STAT table when you performed STAT Check in STAT Status menu.
(2). If not need this calibration, don't care.
(3). If the calibrator setting is correct and the calibrator sample cups existed on STAT table when you performed STAT Check in STAT Status menu, contact Technical Support Department.
Cause
(1). The calibrator sample cups did not exist on STAT table when you performed STAT Check in STAT Status menu. But you request to measure the calibrator sample cups on STAT table now. (Auto/Manual ACAL)
Error detail
aa : Calibrator No. (1-80)

4107 INVALID STAT CUP (CONTROL NO. aa)
System Status
(1). If measure start, the STAT QC of the displayed QC No. is not performed.
User Action
(1). Check whether the QC sample cups existed on STAT table when you performed STAT Check in STAT Status menu.
(2). If not need this QC, don't care.
(3). If the QC setting is correct and the QC sample cups existed on STAT table when you performed STAT Check in STAT Status menu, contact Technical Support Department.
Cause
(1). The QC sample cups did not exist on STAT table when you performed STAT Check in STAT Status menu. But you request to measure the QC sample cups on STAT table now. (Auto/Manual QC)
Error detail
aa : QC No. (1-60)

4108 INVALID STAT CUP (RB)

System Status
(1). If measure start, the STAT RB/calibration is not performed.
User Action
(1). Check whether the RB sample cup existed on STAT table when you performed STAT Check in STAT Status menu.
(2). If not need RB, don't care.
(3). If the RB setting is correct and the RB sample cup existed on STAT table when you performed STAT Check in STAT Status menu, contact Technical Support Department.
Cause
(1). The RB sample cup did not exist on STAT table when you performed STAT Check in STAT Status menu. But you request to measure the RB sample cups on STAT table now. (Auto/Manual ACAL)

9141 Hard Copy Error

System Status
(1). Printing stops.
User Action
(1). Perform the following :
1). Confirm the status of the printer.
a). Verify that there is adequate paper.
b). Verify that the printer Online LED is on.
2). Restart printing.
(2). If the alarm re-occurs, conduct the following :
1). Re-boot the printer. Wait at least two seconds before powering on.
2). Restart printing.
(3). If the alarm re-occurs contact Olympus Technical Support.
Cause
(1). Error occurs during printing due to one of the following :
1). No paper.
2). The printer Online LED is not on.
3). Other mechanical trouble.

9143 PRINTER BUSY

<Operation>
(1). The print job requested will not be printed.
(2). Unable to use the standard printer.
User Action
(1). Re-start the print job after printer finishes printing.
(2). Verify that the printer is turned on and set correctly.
(3). Call Olympus Technical Support.
Cause
The printer was in use when the additional print job was requested.

9173 SECONDARY PRINTER BUSY

<Operation>
(1). The print job requested will not be printed.
(2). Unable to use the option printer.
User Action
(1). Re-start the print job after printer finishes printing.
(2). Verify that the printer is turned on and set correctly.
(3). Call Olympus Technical Support.
Cause
The printer was in use when the additional print job was requested.

9174 PRINTOUT ERROR

System Status
(1). If the alarm occurs during real-time data log printing, the following events can occur :
1). After error occurs, next data is not printed out.
2). In such a case, the data after the alarm are saved on the hard drive and can be reprinted once corrective action has been taken.
(2). If the alarm occurs while printing in batch mode on print screen mode, the print job will be terminated.
User Action
(1). Verify that printer is set up correctly.
(2). Call Olympus Technical Support.
Cause
When printing on the standard printer, the error can occurs due to the following :
1). No paper.
2). Other mechanical problems.

9176 SECONDARY PRINTER PRINTOUT ERROR

System Status
(1). If the alarm occurs during real-time data log printing, the following can occur :
1). After error occurs, next data is not printed.
2). In such a case, the data is saved on the hard drive and can be reprinted after corrective action has been taken.
(2). If the error occurs during batch printing or using the print screen function, the print job will be terminated.
User Action
(1). Verify that the printer is set up correctly.
(2). Call Olympus Technical Support.
Cause
(1). When printing on the option printer, error occurs due to the following :
1). No paper.
2). The option printer is not on-line.
3). The option printer is off.
4). The option printer is not connected to the computer properly.
5). Other mechanical problems.

9241 PRINTER BUSY

(This error is not existing)

System Status
(1). The print job requested will be terminated.
(2). Unable to perform print jobs that use the optional printer.
User Action
(1). Verify that the printer is set up correctly.
(2). Re-start the print job after the printer finishes printing.
(3). Call Olympus Technical Support.
Cause
An additional print job was requested while the printer was in use.

9401 Access is denied
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9402 This account is currently disabled and cannot be logged on to
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9403 The user's account has expired
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9404 Some user account restriction has prevented successful authentication
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9405 Attempt to create file that already exists
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9406 The system is currently running with the last-known-good configuration
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9407 The storage control blocks were destroyed
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9408 The specified user name is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9409 The configuration registry database is damaged
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9410 The configuration registry key is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9411 The requested resource is in use
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9412 Cannot complete function for some reason
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9413 The directory or file cannot be created
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9414 The configuration registry key cannot be opened
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9415 The configuration registry key cannot be read
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9416 The configuration registry key cannot be written
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9417 An attempt was made to create a stable subkey under a volatile parent key
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9418 Data error
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9419 The database specified does not exist
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9420 The directory is not empty
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9421 The directory name is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9422 The disk structure is damaged and unreadable
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9423 There is not enough space on the disk
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9424 While accessing the hard disk, a disk operation failed
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9425 While accessing the hard disk, a recalibrate operation failed
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9426 A hard disk controller reset was needed, but even that failed
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9427 An extended error has occurred
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9428 The file or directory is damaged and unreadable
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9429 The system cannot find the file specified
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9430 The file name or extension is too long
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9431 The disk is full
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9432 Reached End Of File
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9433 This operation cannot be completed due to on-disk data structure corruption
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9434 The system cannot find the specified drive
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9435 The flag passed is incorrect
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9436 The flags are invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9437 The user account has time restrictions and cannot be logged onto at now
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9438 The parameter is incorrect
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9439 The specified network password is incorrect
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9440 The format of the specified password is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9441 The printer command is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9442 The printer name is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9443 The user account is restricted and cannot be used to log on
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9444 The attempted logon is invalid
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9445 The global filename characters * or ? are entered incorrectly
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9446 An attempt was made to move the file pointer before the beginning of the file
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9447 System could not allocate required space in a registry log
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9448 The drive is not ready
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9449 The system cannot open the specified device or file
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9450 The I/O operation was aborted due to either thread exit or application request
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9451 The printer is out of paper
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9452 File waiting to be printed was deleted
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9453 The printer queue is full
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9454 The registry is damaged
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9455 The registry initiated an I/O operation that had an unrecoverable failure
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9456 The drive cannot locate a specific area on the disk
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9457 The file pointer cannot be set on the specified device or file
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9458 Insert the disk for drive 1
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9459 The credentials supplied conflict with an existing set of credentials
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9460 The process cannot access the file because it is being used by another
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9461 The system cannot open the file
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9462 The disk media is not recognized. It may not be formatted
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9463 The media is write protected
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9471 File generic Error [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9472 File not found [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9473 Bad pathname [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9474 Too many open files [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9475 File access denied [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9476 Invalid File handle [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9477 Can't remove current directory [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9478 Full directory [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9479 Bad seek pointer [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9480 File Hardware I/O Error [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9481 File sharing violation [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9482 File lock violation [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

9483 File disk full [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

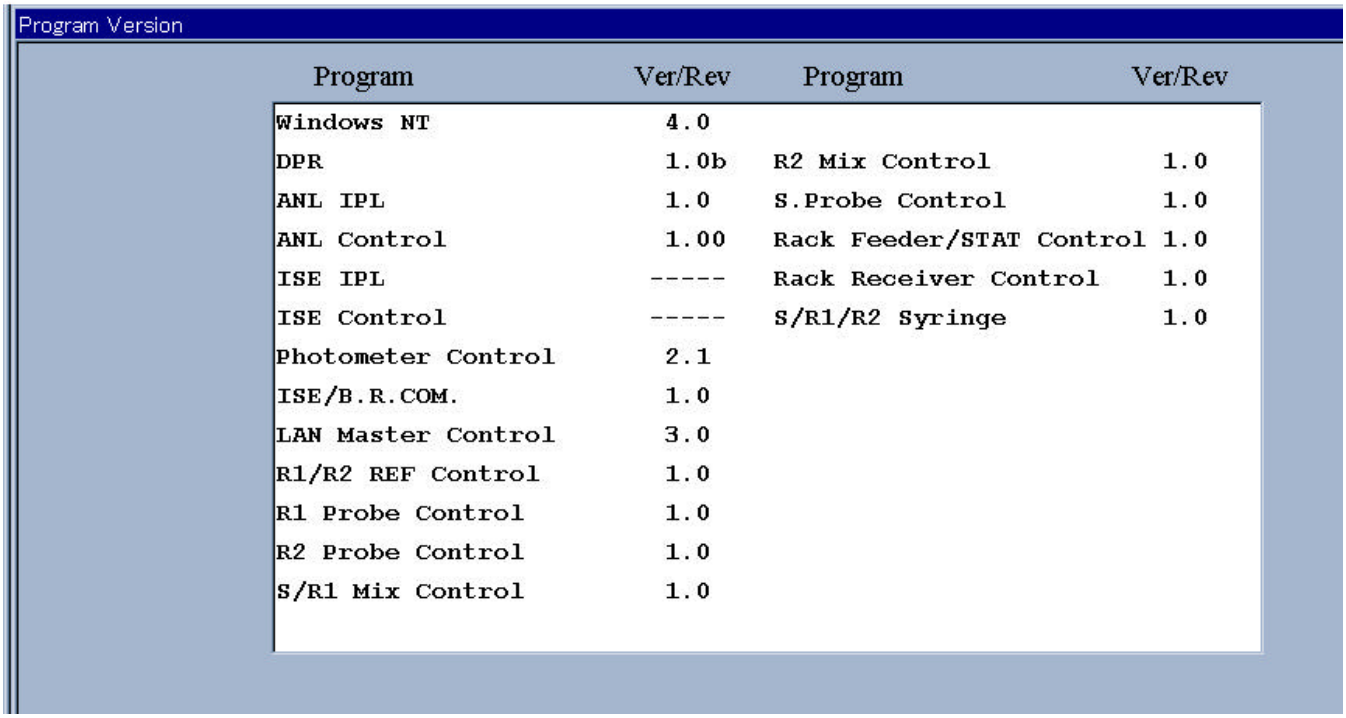
9484 File end of file [%s]
System Status
(1). Proceed to the next process or Unknown.
User Action
(1). Verify that the data is correct.
(2). Contact Technical Support Department.
Cause
(1). When running programs in the data processing unit, error occurs due to the hardware or software of the computer.

■ DIAG

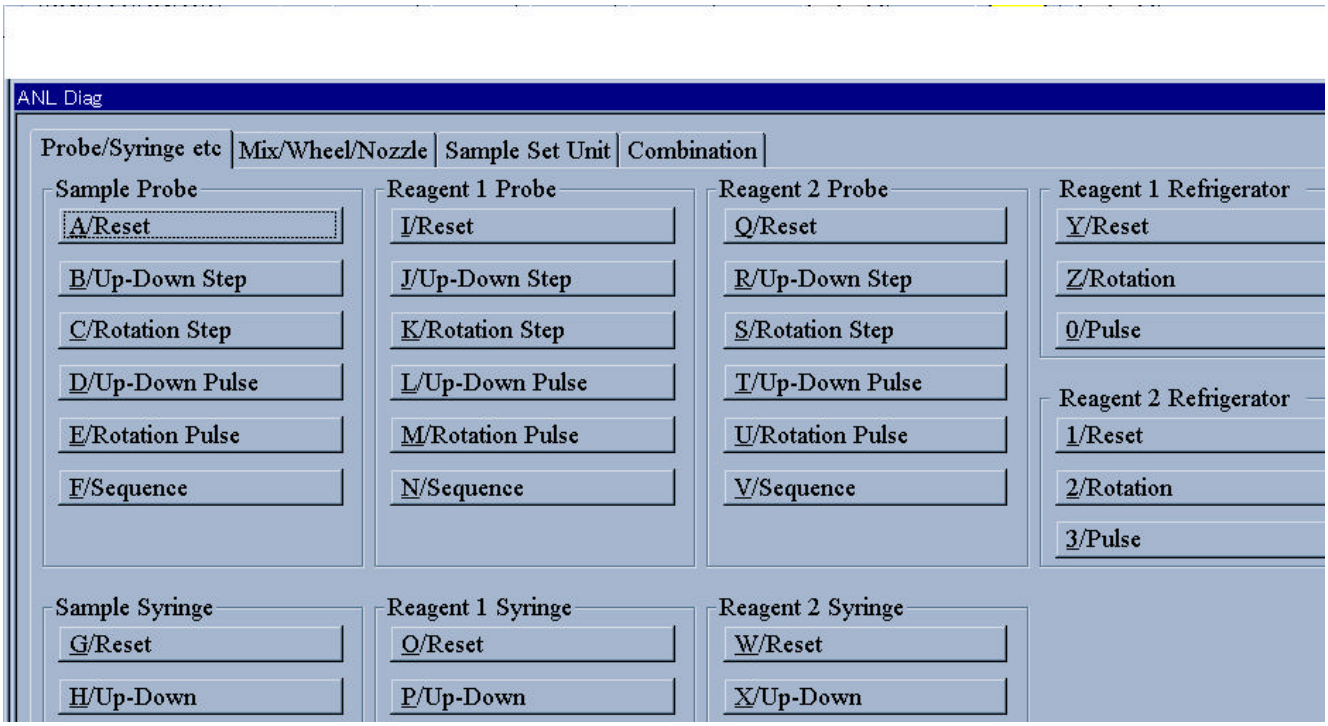
(M) Maintenance

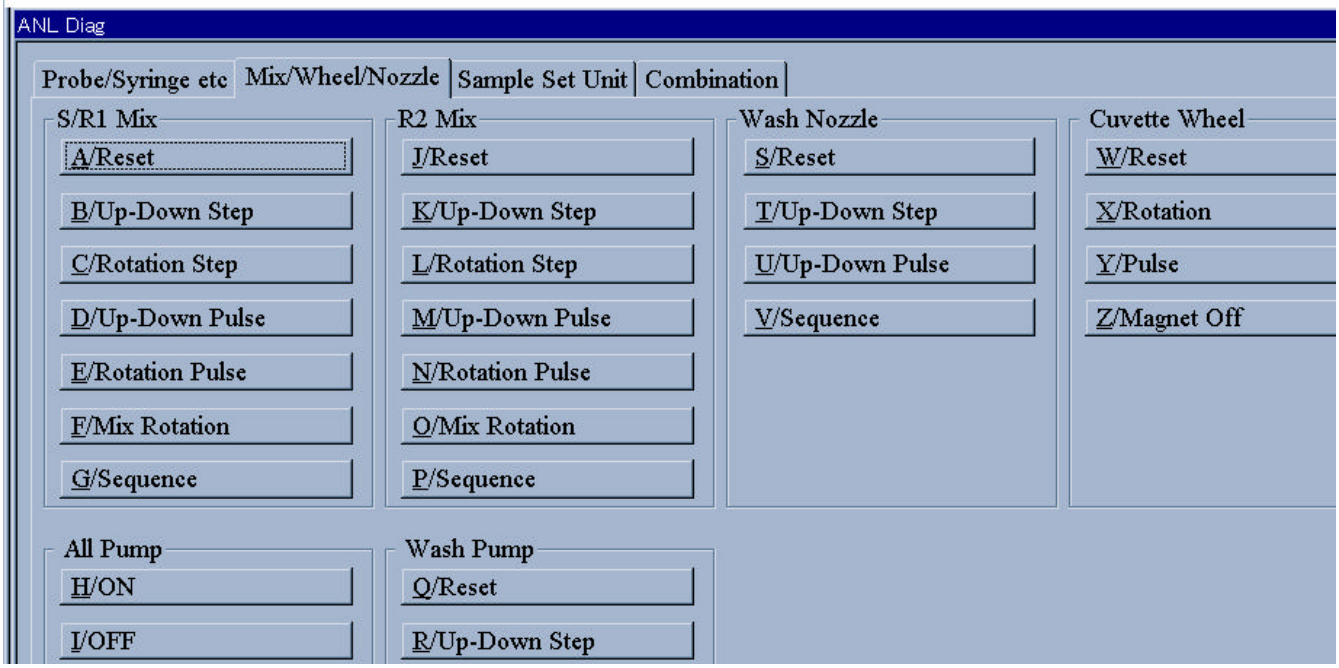
(D) Data Operation (A) ANL Maintenance (C) Consumable Maintenance (P) Periodic Maintenance (M) Maker Maintenance	----------	(V) Program version (A) ANL DIAG (I) ISE DIAG (L) Alarm Log (F) File management

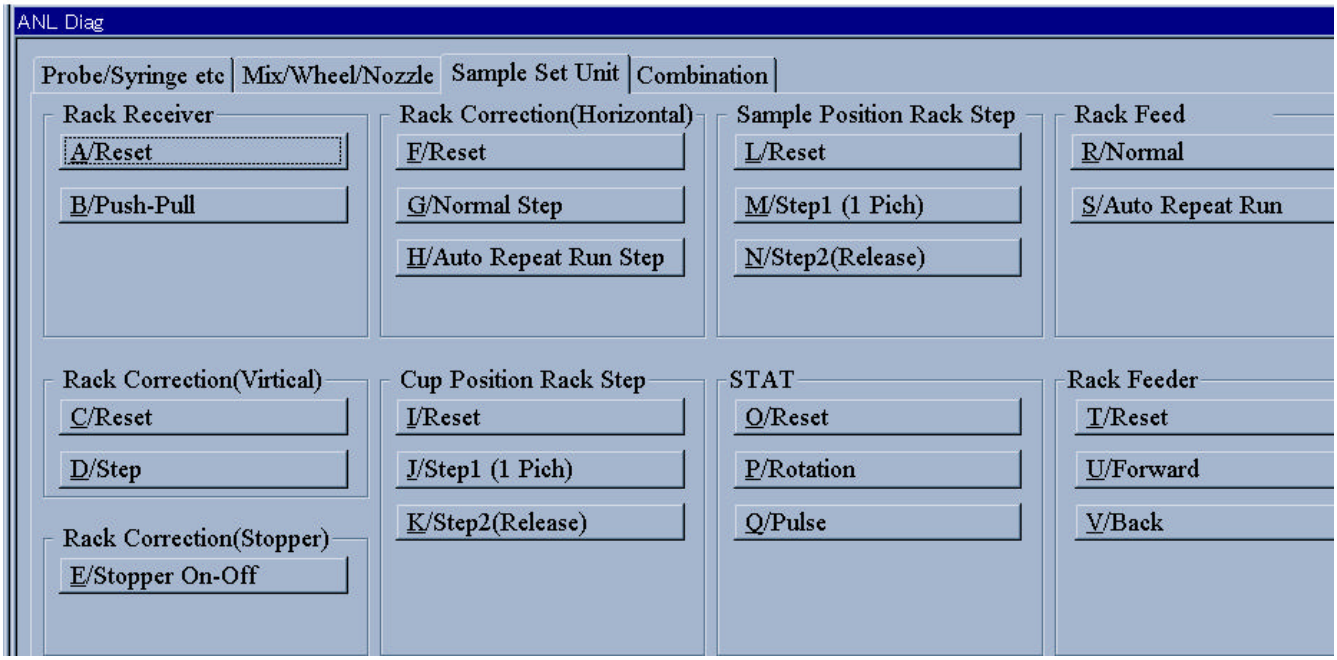
(V) Program version

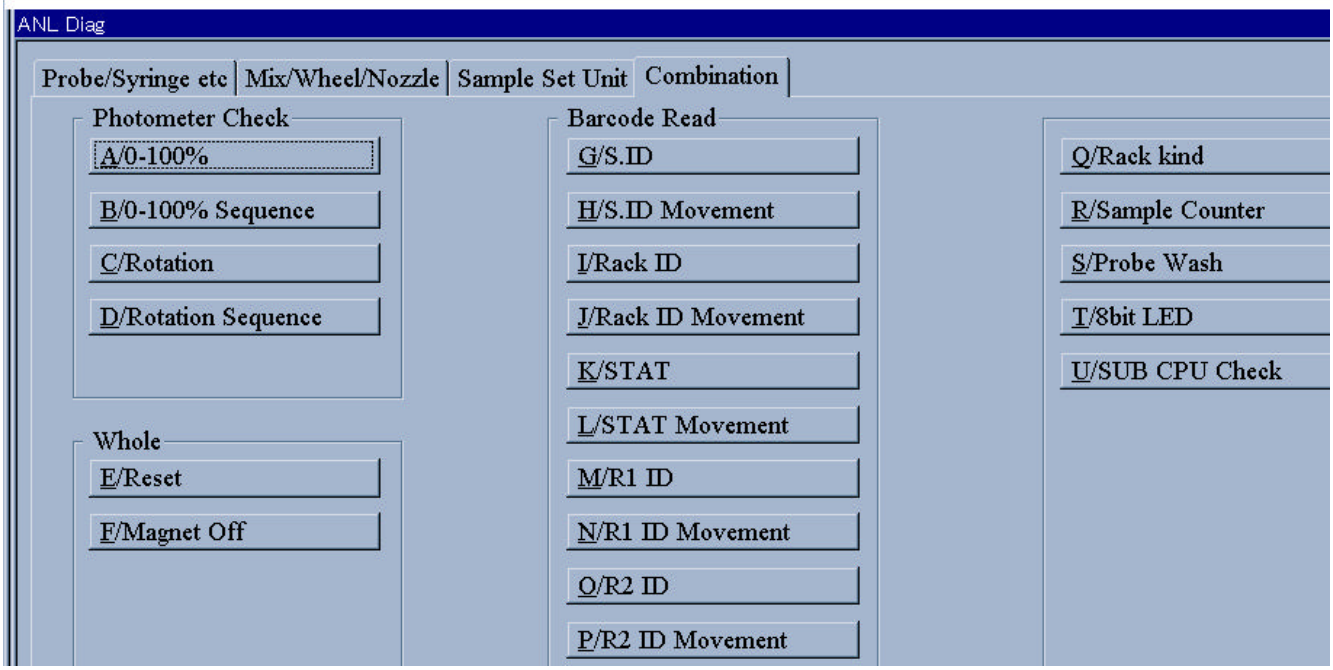


(A) ANL DIAG

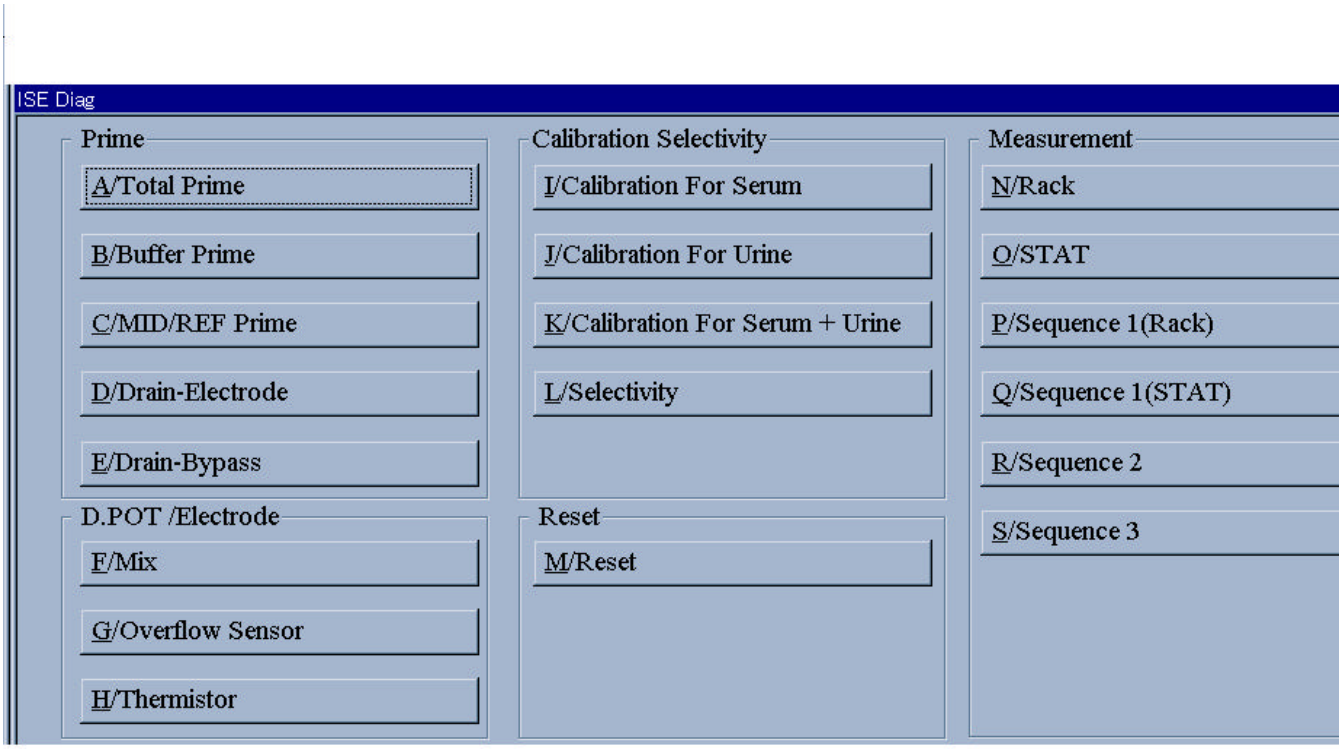

ANL Diag
Probe/Syringe etc
Mix/Wheel/Nozzle
Sample Set Unit
Combination
Sample Probe
A/Reset
B/Up-Down Step
C/Rotation Step
D/Up-Down Pulse
E/Rotation Pulse
F/Sequence
Reagent 1 Probe
I/Reset
J/Up-Down Step
K/Rotation Step
L/Up-Down Pulse
M/Rotation Pulse
N/Sequence
Reagent 2 Probe
Q/Reset
R/Up-Down Step
S/Rotation Step
T/Up-Down Pulse
U/Rotation Pulse
V/Sequence
Reagent 1 Refrigerator
Y/Reset
Z/Rotation
0/Pulse
Reagent 2 Refrigerator
1/Reset
2/Rotation
3/Pulse
Sample Syringe
G/Reset
H/Up-Down
Reagent 1 Syringe
O/Reset
P/Up-Down
Reagent 2 Syringe
W/Reset
X/Up-Down


ANL Diag
Probe/Syringe etc
Mix/Wheel/Nozzle
Sample Set Unit
Combination
S/R1 Mix
A/Reset
B/Up-Down Step
C/Rotation Step
D/Up-Down Pulse
E/Rotation Pulse
F/Mix Rotation
G/Sequence
R2 Mix
J/Reset
K/Up-Down Step
L/Rotation Step
M/Up-Down Pulse
N/Rotation Pulse
O/Mix Rotation
P/Sequence
Wash Nozzle
S/Reset
T/Up-Down Step
U/Up-Down Pulse
V/Sequence
Cuvette Wheel
W/Reset
X/Rotation
Y/Pulse
Z/Magnet Off
All Pump
H/ON
I/OFF
Wash Pump
Q/Reset
R/Up-Down Step

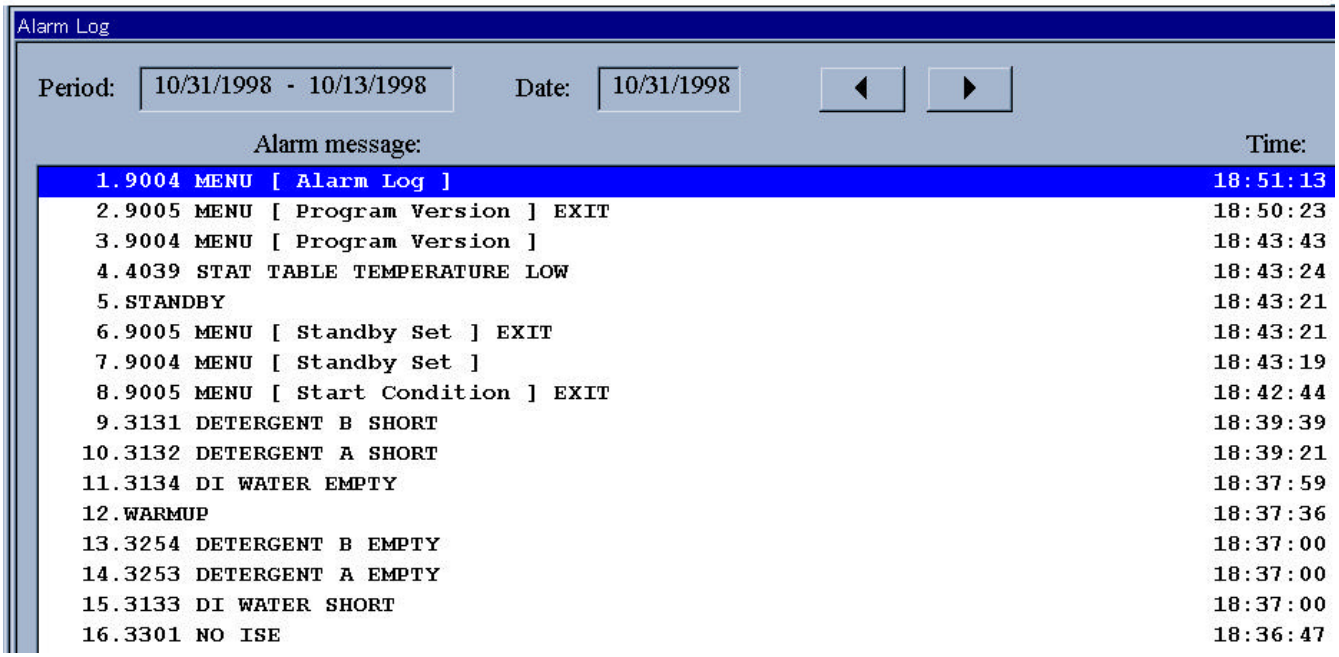

ANL Diag
Probe/Syringe etc
Mix/Wheel/Nozzle
Sample Set Unit
Combination
Rack Receiver
A/Reset
B/Push-Pull
Rack Correction(Horizontal)
F/Reset
G/Normal Step
H/Auto Repeat Run Step
Sample Position Rack Step
L/Reset
M/Step1 (1 Pich)
N/Step2(Release)
Rack Feed
R/Normal
S/Auto Repeat Run
Rack Correction(Virtical)
C/Reset
D/Step
Rack Correction(Stopper)
E/Stopper On-Off
Cup Position Rack Step
I/Reset
J/Step1 (1 Pich)
K/Step2(Release)
STAT
O/Reset
P/Rotation
Q/Pulse
Rack Feeder
T/Reset
U/Forward
V/Back


ANL Diag
Probe/Syringe etc
Mix/Wheel/Nozzle
Sample Set Unit
Combination
Photometer Check
A/0-100%
B/0-100% Sequence
C/Rotation
D/Rotation Sequence
Whole
E/Reset
F/Magnet Off
Barcode Read
G/S.ID
H/S.ID Movement
I/Rack ID
J/Rack ID Movement
K/STAT
L/STAT Movement
M/R1 ID
N/R1 ID Movement
O/R2 ID
P/R2 ID Movement
Q/Rack kind
R/Sample Counter
S/Probe Wash
T/8bit LED
U/SUB CPU Check

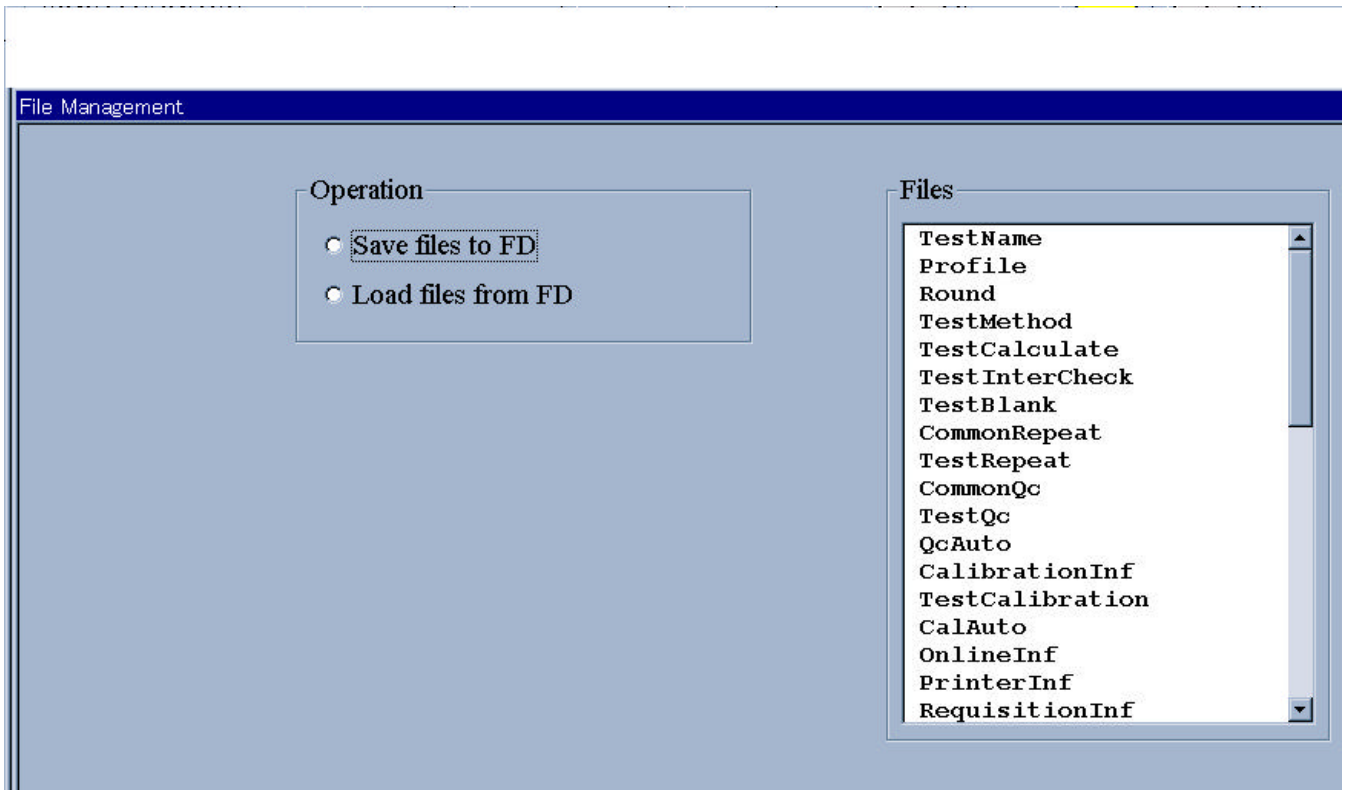
(I) ISE DIAG



(L) Alarm Log


Alarm Log
Period: 10/31/1998 - 10/13/1998
Date: 10/31/1998
Alarm message:
Time:
1.9004 MENU [Alarm Log] 18:51:13
2.9005 MENU [Program Version] EXIT 18:50:23
3.9004 MENU [Program Version] 18:43:43
4.4039 STAT TABLE TEMPERATURE LOW 18:43:24
5.STANDBY 18:43:21
6.9005 MENU [Standby Set] EXIT 18:43:21
7.9004 MENU [Standby Set] 18:43:19
8.9005 MENU [Start Condition] EXIT 18:42:44
9.3131 DETERGENT B SHORT 18:39:39
10.3132 DETERGENT A SHORT 18:39:21
11.3134 DI WATER EMPTY 18:37:59
12.WARMUP 18:37:36
13.3254 DETERGENT B EMPTY 18:37:00
14.3253 DETERGENT A EMPTY 18:37:00
15.3133 DI WATER SHORT 18:37:00
16.3301 NO ISE 18:36:47

(F) File management



■ Software history table

MEDIA TYPE		Ver/ Rev	Ver/ Rev	Ver/ Rev	Ver/ Rev	Ver/ Rev	Ver/ Rev	Ver/ Rev	Ver/ Rev
AU640 SYSTEM PROGRAM CD-ROM (OAI)	MV2552	1.0	1.1	1.2	1.3	2.0	2.1		
AU640 SYSTEM PROGRAM CD-ROM (ODH)	MV2553	1.0	1.1	-	-	2.0	2.1		
AU640 SYSTEM PROGRAM CD-ROM (Asia)	MV2554	1.0	1.1	-	-	2.0	2.1		
ANL IPL ROM	MV2181	1.0	<-	<-	<-	<-	<-		
ISE IPL ROM	MV2191	1.0	<-	<-	<-	<-	<-		
Photometer Control ROM	MV1037	2.1	<-	<-	<-	<-	<-		
ISE/B.R. COM. ROM	MV2611	1.0	<-	<-	<-	<-	<-		
LAN Master Control ROM	MV1030	3.0	<-	<-	<-	<-	<-		
R1/R2 REF Control ROM	MV2352	1.0	<-	<-	<-	<-	<-		
S Probe Control ROM	MV2351	1.0	<-	<-	<-	<-	<-		
R1,R2 Probe Control ROM	MV2330	1.0	<-	<-	<-	<-	<-		
S/R1,R2 MIX Control ROM	MV2353	1.0	<-	<-	<-	<-	<-		
Rack Feeder/Stat Control ROM	MV2348	1.0	<-	<-	<-	<-	<-		
Rack Receiver Control ROM	MV2349	1.0	<-	<-	<-	<-	<-		
S/R1/R2Syringe Control ROM	MV2350	1.0	<-	<-	<-	<-	<-		

- Please read the “Safety precautions to be observed at time of repair” carefully before making any repairs.
- The precautions give important information about safety and must be observed. The visual cues and their meanings are as follows.

⚠WARNING

This cue is used if death or severe injury may result. Severe injuries include loss of sight, cuts, burns (high- and low-temperature), electric shock, fractures, poisoning, and other injuries with aftereffects, or injuries that require admission to a hospital or long-term treatment.

⚠CAUTION

This cue is used if injury to the user or material damage may result, or if the analysis results may be heavily and adversely altered. It is also used if there is a possibility of infection. Injuries include cuts, burns, electric shock, and other injuries which do not require admission to a hospital or long-term treatment.
Material damage includes extensive damage to housing, household goods, and livestock.

- Sections marked by ⚠ in this text are especially important.
- Please strictly adhere to the warning labels on the exterior of the product (DANGER, WARNING, CAUTION, etc.) and the service-information labels on the interior.

1. Electric Shock Safety Precautions

⚠ WARNING

(1) To prevent electric shock and accidental short-circuits during repair, and disassembly and assembly, always switch off the main power supply and wait at least 10 seconds before starting work.
(2) To prevent electric shock and accidental short-circuits, do not touch the electric parts and wiring with wet hands.

2. Eye Safety Precautions

⚠ WARNING

(1) If making repairs involving reagents and chemicals used with the product (strong acids [acetic acid, SAKURIN, coloring solution, etc.], strong alkalis [hypochlorous acid, concentrated incubation cell washing solution, etc.]), wear protection goggles to protect your eyes.

3. General Injury Safety Precautions

⚠ CAUTION

(1) If making repairs involving reagents and chemicals used in the product (strong acids [acetic acid, SAKURIN, coloring solution, etc.], strong alkalis [hypochlorous acid, concentrated incubation cell washing solution, etc.]), wear rubber gloves to prevent direct contact with your hands.
(2) If making repairs involving disassembly, assembly, etc., handle the soldered surfaces of circuit boards, sharp edges of parts, etc., with extreme care to prevent injuries.
(3) When performing work in the energized condition, be aware of the operation of the equipment to prevent injuries.
(4) If servicing glass parts (lamps, bottles, etc.), handle them carefully to prevent breakage.

4. Eye Protection Precautions

⚠ CAUTION

(1) To protect your eyes, do not look directly into the light source without eye protection.
(2) To protect your eyes, do not look directly into a laser light source or at laser light.

5. Infection Safety Precautions

⚠ CAUTION

(1) If making repairs involving waste materials, waste liquids, etc., which have come into contact with samples, reagents, antibodies, antigens, etc., always wear rubber gloves and other appropriate protection.
(2) If scratches or cuts have been sustained during the work, immediately disinfect the wound, cover the wound with a bandage, etc., and put on new rubber gloves and other appropriate protection. If neccessary, consult a physician.
(3) After completing work, wash and disinfect your hands, gloves, tables, jigs, tools, etc.

6. Cautions in Regard to Burns

⚠ CAUTION

(1) If making repairs involving lamps, pulse motor drivers, cooling fins, and other hot parts, switch off the main power supply and start the work only after having confirmed that the hot parts have cooled down to room temperature.
(2) If work is performed in the energized condition, exercise care so as not to directly touch hot parts.

7. Poisoning Safety Precautions

⚠ CAUTION

(1) If making repairs involving antipsychotic drugs (palpital buffer, etc.) etc., perform the work in accordance with the handling precautions listed for the drugs.
(2) When handling volatile chemicals, exercise care so as not to inhale them.

8. Other General Precautions

⚠ CAUTION

(1) If caution labels or other labels become damaged or fall off, replace them immediately.
(2) Only use specified repair parts.
(3) If a problem with a periodic maintenance item is found, have the problem rectified and record the problem.
(4) If erroneous operation, erroneous use, or erroneous installation of the equipment is determined, have the problem retified and record the problem.

If making repairs involving the electric system, observe the relevant precautions to protect yourself from electric shock, etc.
Information about precautions that must be observed for specific types of work is indicated by ⚠ WARNING or a warning mark. The work must be performed by paying special attention to these precautions.

■ Cautions for using Rotation Unit

⚠ CAUTION

For use of the rotation unit, perform position confirmation at all positions after placing the unit onto the equipment.

* Please confirm the positions with the actual equipment, as adjustment at the site may be made with loosened positioning pins, so that the positions at the factory and the positions at the site no longer may be the same.

In regard to the stop position sensor for the FA and the FD unit

The stop position sensor for the FA and the FD unit has been adjusted according to the design value for the rotation pulse number (status where the pulse correction value is "0").
When a pulse correction value has been entered, the stop position sensor must be adjusted accordingly.

■ Cautions for using batteries or storage batteries

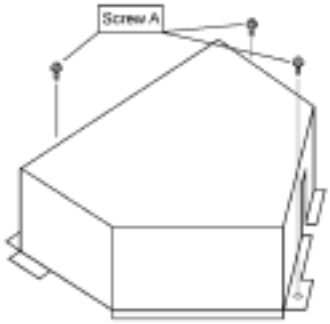
⚠ CAUTION

The regulations of the respective country shall be applied for use methods, exchange methods, and discarding methods for batteries and storage batteries.

■ Exchange of the Photo-detection Board

● Standard

Fix the photo-detection board by bringing it into contact with the jig.



0% data

-5 to +25

100% data

When water has been measured with the cuvette in clean condition, the OD value shall be 1.4 or less. (Error is generated more than 1.7354)

● Used jig

Distance adjustment jig for light reception surface (KCM0315)

● Exchange method

(1) Before exchange of the photo-detection board, check the 0-100% data.
(2) Switch off the power for the AU640.
(3) Remove the screws A fixing the cover of the photometry unit. (Refer to Fig. 1.)
(4) Place a clean vinyl sheet over the diffraction grating, so that no dirt will get onto it.
(5) Remove the screws B fixing the photo-detection board and remove the photo-detection board.
(6) Install the new photo-detection board and fasten it provisionally.
(7) Bring the jig into contact with the photo-detection board and then fix the photo-detection board. (Refer to Fig. 2.)
(8) Remove the jig and the vinyl sheet placed over the diffraction grating.
(9) Install the cover of the photometry unit.
(10) Perform photo calibration.
(11) Check the photo calibration data.
(12) Check the data by actual analysis.

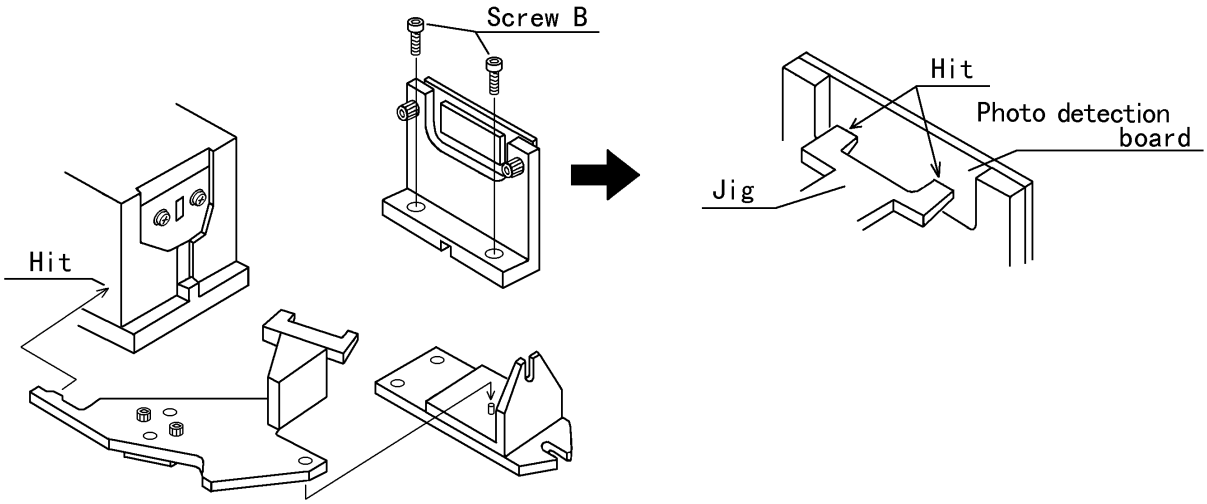


Fig. 2

■ Exchange of DA(Reagent compartment) rotation motor

● Standard

Fix the DA rotation motor and pushing to the rotation gear.
(Backlash = 0) Refer to the caution.

● Exchange Method

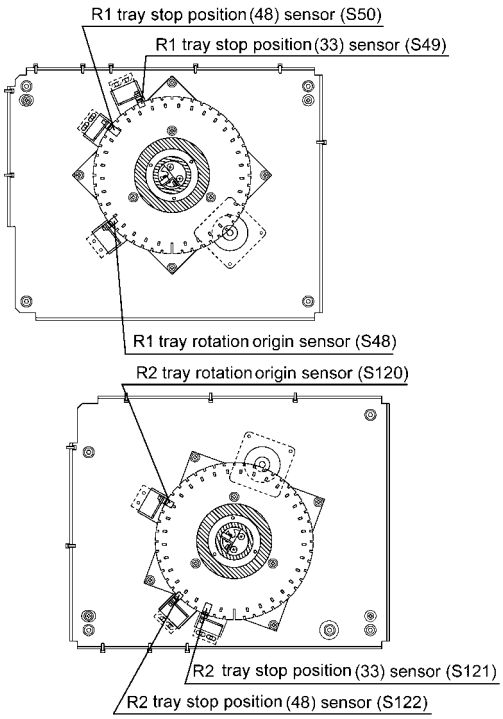
Dismount the DA rotation motor and loosing 4 fixing screws from lower side.
Mount the DA rotation motor in same direction with before dismounting.
Fix the DA rotation motor and pushing to the rotation gear.

● Caution

When fixing the DA rotation motor and pushing to the rotation gear, proceed the following action because centering of the rotation gear may not be really center.

Rotate the rotation gear one turn under the situation not tighten the fixing screws of motor.
Find the tightest position of gear backlash.
Push the motor to the rotation gear at the tightest position.
Tighten the fixing screws of the motor.

Proceed the above action, otherwise DA rotation error will occur. Because, tighter position appears in backlash than the fixing position. (CC035-0272)


R1 tray stop position (48) sensor (S50)
R1 tray stop position (33) sensor (S49)
R1 tray rotation origin sensor (S48)
R2 tray rotation origin sensor (S120)
R2 tray stop position (33) sensor (S121)
R2 tray stop position (48) sensor (S122)

■ Feed Plate Tension

● Standard

When the feed plate at the center part of the CA unit is pulled up with a string with a force of 1100 g, it shall rise by 51 ± 1 mm. (Refer to Fig. 1 and Fig. 2.)

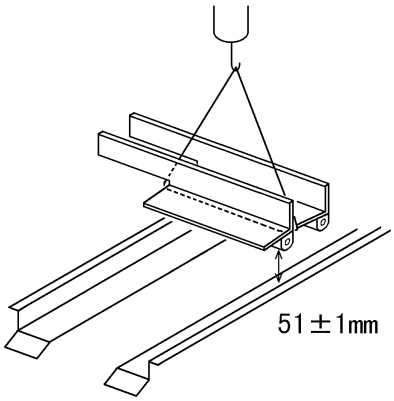


Fig. 1

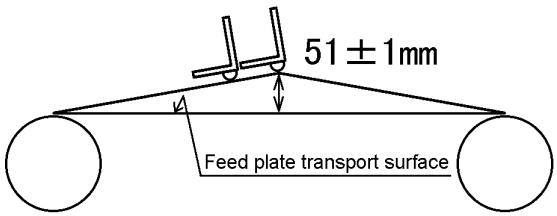


Fig. 2

● Check method

(1) Switch off the power for the AU640.
(2) Raise the center part of the CA unit with a string with a force of 1100 g.
(3) At this time, confirm the distance between the transport surface of the feed plate and the bottom of the feed plate with a scale.

● Adjustment method

(1) Remove the covers around the CA unit.
(2) Adjust with the feed plate tension adjustment screws A so that the standard is met. (Refer to Fig. 3.) (First loosen the hexagonal nuts, and then adjust the tension with the screws A.)

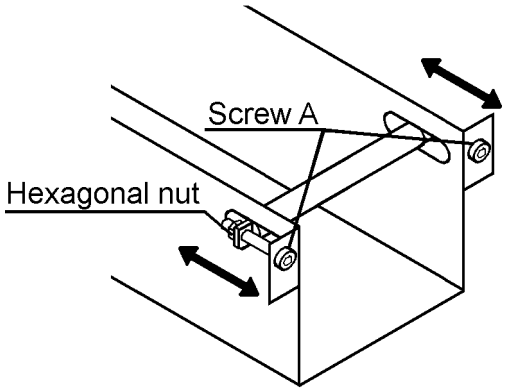


Fig.3

***** Caution item *****

Adjust the left and the right screw equally for parallel orientation of the feed plate.

■ Feed Plate Stop Position (feed pitch position)

● Standard

1. 0 to 0.5 mm recessed from the position of the inner surface of the right guide of CB. (Refer to Fig. 1.) All feed plates shall meet the standard.
2. The detection plate at the bottom of the feed plate shall be at the center of the sensor. (Refer to Fig. 2.)

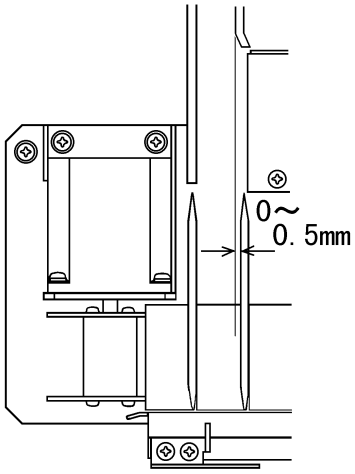


Fig. 1

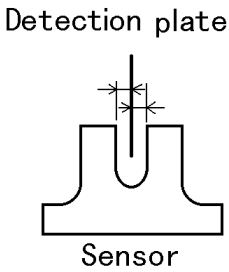


Fig. 2

● Check method

(1) Initialize the CA unit.
(2) Bring a scale into contact with the inner surface of the right guide of CB and visually confirm the gap to the feed plate.
(3) Visually confirm the gap between the detection plate and the sensor.

● Adjustment method

(1) Remove the covers around the CA unit.
(2) Loosen the screws A and adjust to within standard 1.
(3) Loosen the screws B and adjust to within standard 2.

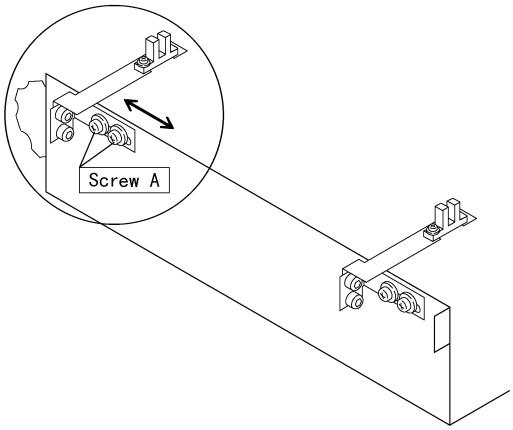


Fig. 3

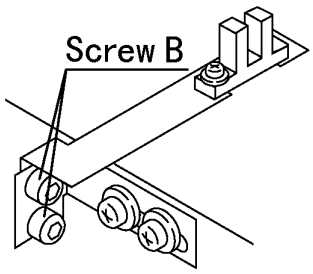


Fig. 4

■ Feed Plate Stop Position (Receptacle pitch position)

● Standard

1. 0 to 0.5 mm recessed from the position of the inner surface of the right guide of CD. (Refer to Fig. 1.) All feed plates shall meet the standard.
2. The detection plate at the bottom of the feed plate shall be at the center of the sensor. (Refer to Fig. 2.)

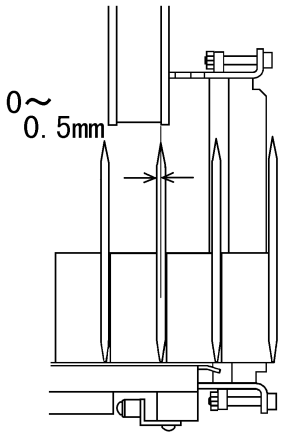


Fig. 1

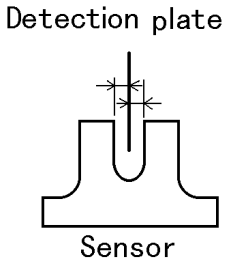


Fig. 2

● Check method

(1) Initialize the CA unit.
(2) Bring a scale into contact with the inner surface of the right guide of CD and visually confirm the gap to the feed plate.
(3) Visually confirm the gap between the detection plate and the sensor.

● Adjustment method

(1) Remove the covers around the CA unit.
(2) Loosen the screws A and adjust to within standard 1.
(3) Loosen the screws B and adjust to within standard 2.

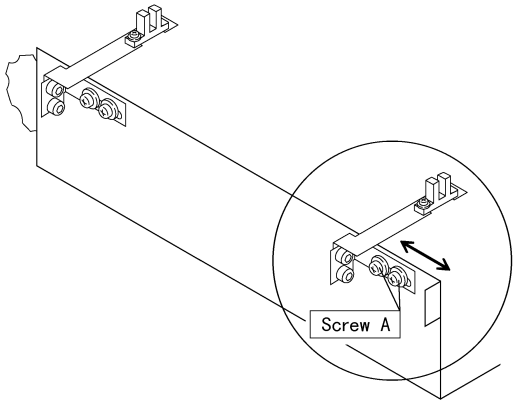


Fig. 3

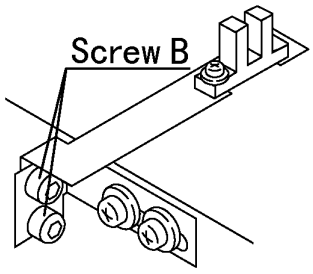


Fig. 4

■ Feed Plate Height (feed pitch position)

● Standard

The rack transport surface of the feed plate shall be 0.5 to 1.0 mm lower than the CB belt. (Refer to Fig. 1.)
All feed plates shall meet the standard.

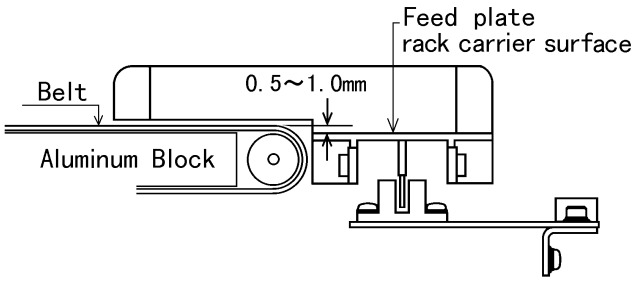


Fig. 1

● Check method

Place a scale against the CB belt and visually confirm the gap to the rack transport surface of the feed plate.

● Adjustment method

(1) Remove the covers around the CA unit.
(2) Loosen the screws A and adjust to within the standard.

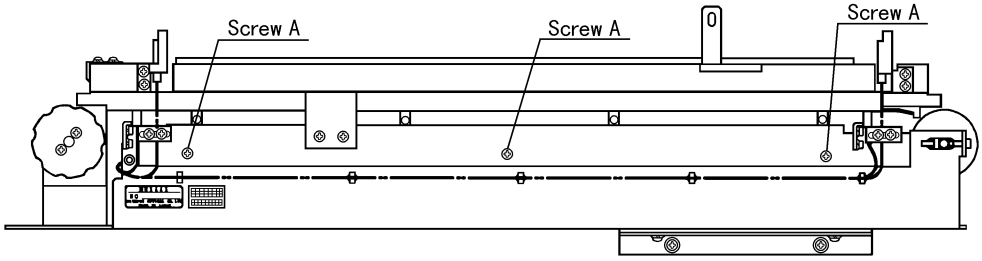


Fig. 2

***** Caution items *****

1. When the height of the feed plate is adjusted, the stop position of the feed plate is disturbed and must be confirmed again.
2. When the screws A are loosened, the feed plate height at the receptacle pitch position also is disturbed and must be confirmed again.

■ Feed Plate Height (Receptacle pitch position)

● Standard

The rack transport surface of the feed plate shall be 0.5 to 1.0 mm lower than the CA belt. (Refer to Fig. 1.)
All feed plates shall meet the standard.

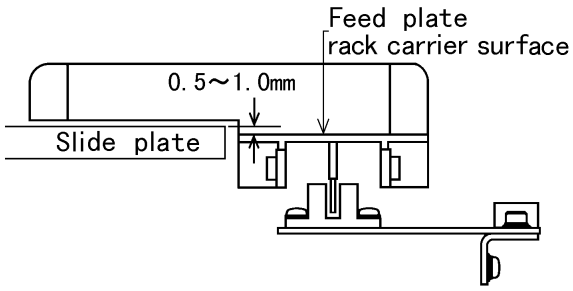


Fig. 1

● Check method

Place a scale against the CA belt and visually confirm the gap to the rack transport surface of the feed plate.

● Adjustment method

(1) Remove the covers around the CA unit.
(2) Loosen the screws A and adjust to within the standard.

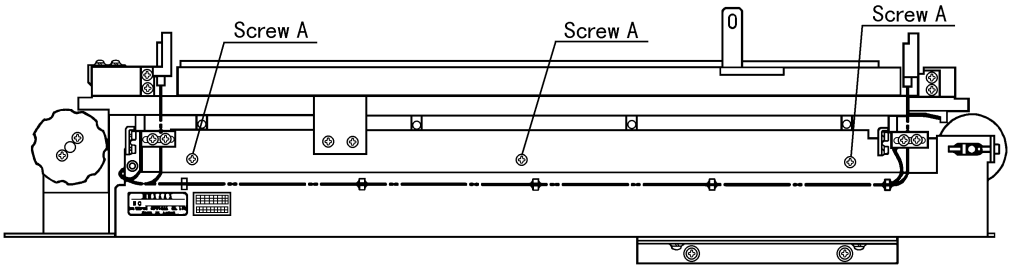


Fig. 2

***** Caution items *****

1. When the height of the feed plate is adjusted, the stop position of the feed plate is disturbed and must be confirmed again.
2. When the screws A are loosened, the feed plate height at the receptacle pitch position also is disturbed and must be confirmed again.

■ Slide Plate Height

- Standard

The slide plate shall be 0.3 to 0.7 mm higher than the belt of the CB unit. (Refer to Fig. 1.)

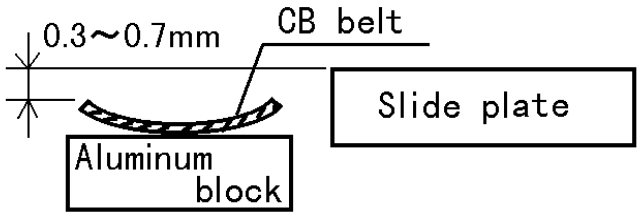


Fig. 1

- Check method

Place a scale against the slide plate and visually confirm the gap to the belt of the CB unit.

- Adjustment method

(1) Remove the screws A and take off the slide plate. (As this is combined with the rack type sensor, remove both together. The rack type sensor is fixed to the slide plate with the screws B.) (Refer to Fig. 2.)
(2) Insert spacers (ME4882, t = 0.5) under the slide plate to adjust to within the standard. (Refer to Fig. 3.)

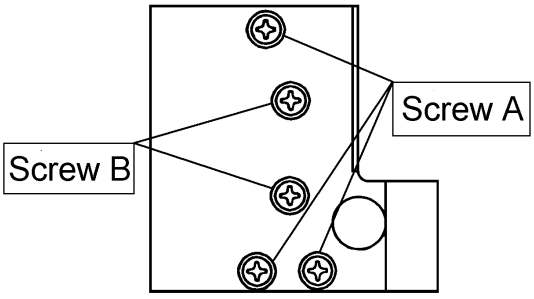


Fig. 2

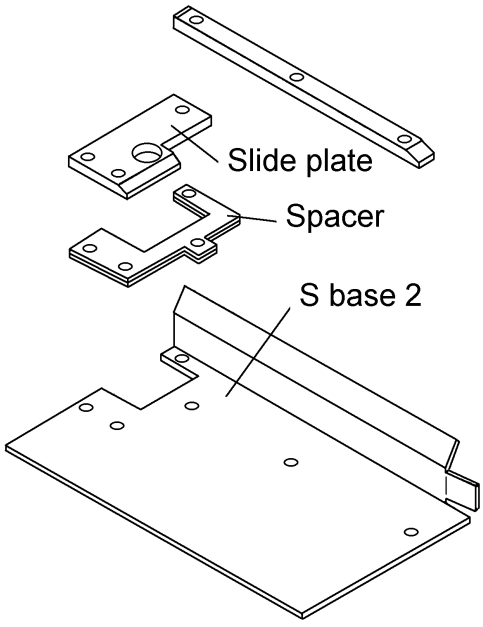


Fig. 3

■ Slide Plate Position

- Standard

The same plane as the outer surface of the right side plate of the CB unit. (Refer to Fig. 1.)

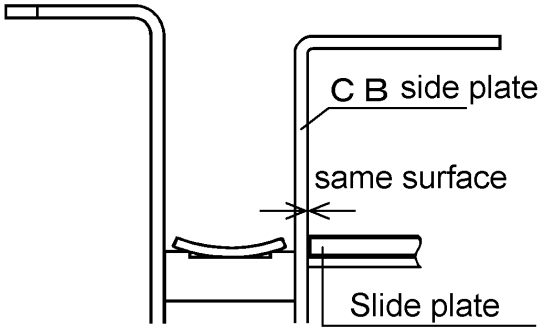


Fig. 1

- Check method

Visually confirm that the slide plate is in the same plane as the outer surface of the right side plate of the CB unit.

- Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

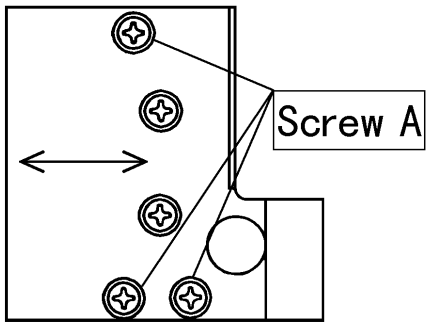


Fig. 2

■ Support Plate Position

- Standard

  The left side of the CB unit and the support plate surface shall be in the same plane.

- Check method

  Place a scale against the left side of the CB unit and visually confirm the gap to the CA support plate.

- Adjustment method

  Loosen the screws A fixing the support plate and adjust to within the standard. (Refer to Fig. 1.)

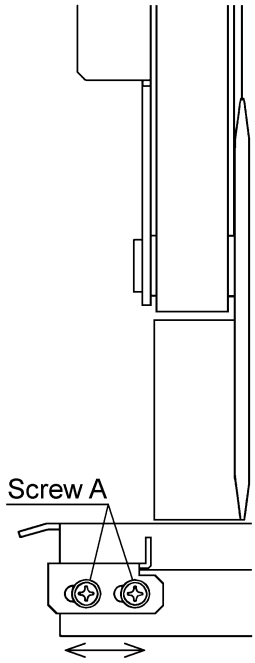
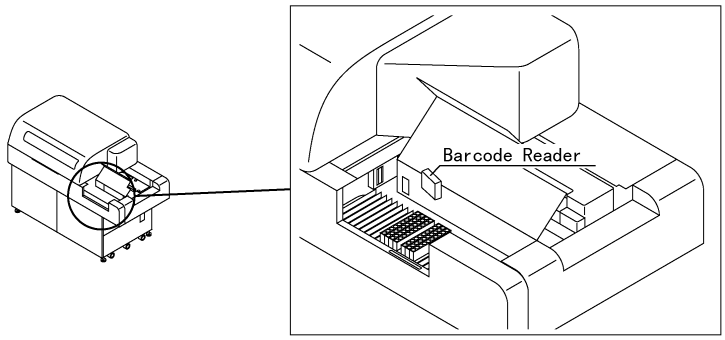


Fig. 1

■ Rack ID Position

⚠ Caution

Do not look directly into the laser beam or at the light.



Barcode Reader
OLYMPUS SYMBOL
Type : LSK6220-I1B0JG
Light source : λ = 670nm
Visible radiation
End light value : 0.68mW
Safety standard : CDRH CLASS II

- Standard

The laser beam strikes vertically with a 1 mm width to the center of the rack (Fig. 1).

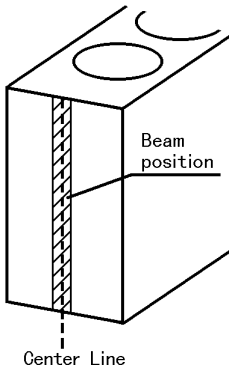


Fig.1

- Check method

(1) Initialize the CA unit.
(2) Set the rack in the rack ID reading position.
(3) Execute rack ID reading with DIAG , and visually check the beam position.
(4) Check to be read the rack ID even the rack shifts at the rack ID reading position with horizontal play.

- Adjustment method

(1) Remove the covers around the barcode reader.
(2) Loosen screw A and adjust for a shift in the a direction (Figs. 2 and 3).
(3) Loosen screw B and adjust for a shift in the b direction (Figs. 2 and 3).
(4) Emit light from the barcode reader and check visually.

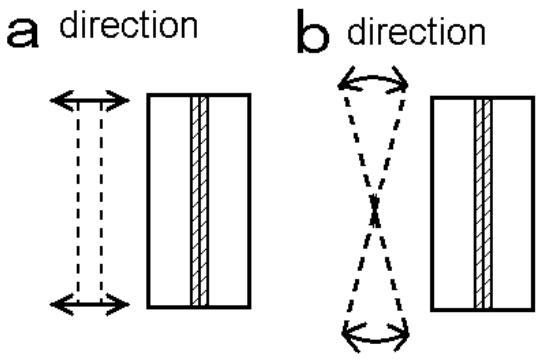


Fig.2

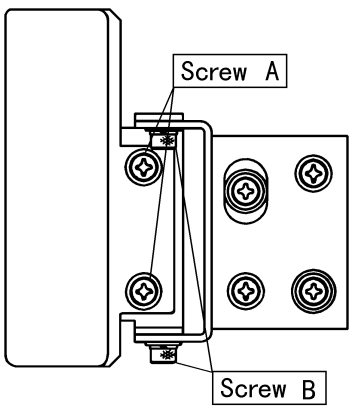


Fig.3

■ Feed Claw Projection Amount

Standard

The feed claw shall project for 2 +0.2/-0 mm beyond the CB side plate. (Refer to Fig. 1, Fig. 2.)

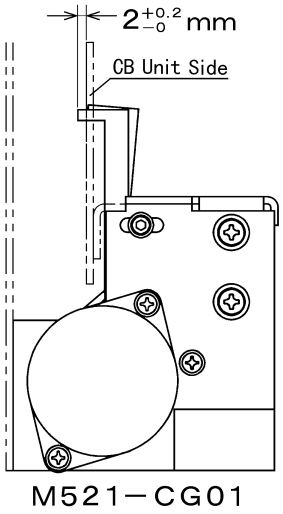


Fig. 1

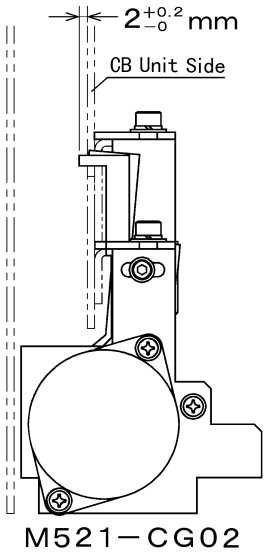


Fig. 2

Check method

(1) Initialize the CG unit.
(2) Confirm the projection amount of the feed claw with a scale.

Adjustment method

(1) Remove the covers around the CG unit.
(2) Loosen the screws A for adjustment of the CG01 unit (cup detection side) or the screws B for adjustment of the CG02 unit (sample aspiration side) and move in arrow direction to adjust. (Refer to Fig. 3, Fig. 4.)
(3) Perform a rack transport test with DIAG.

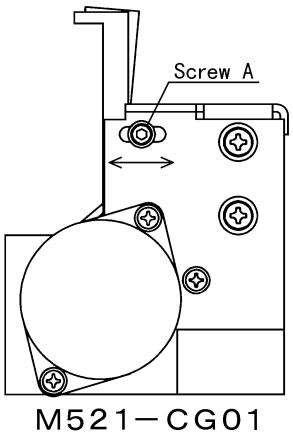


Fig. 3

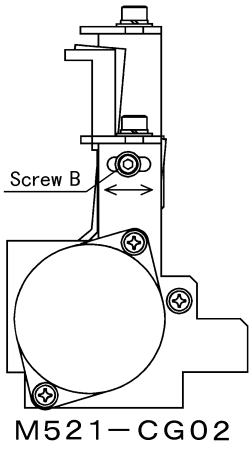
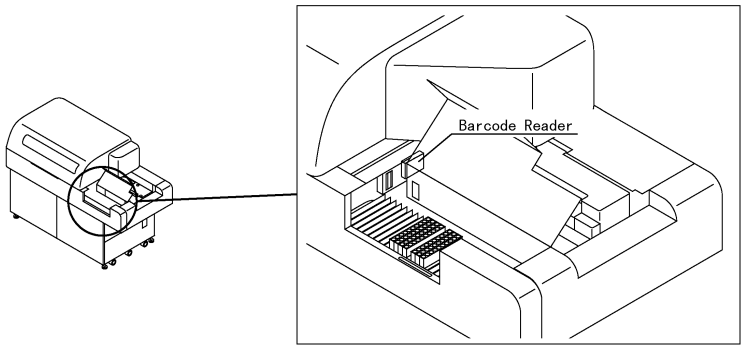


Fig. 4

■ Sample ID position

⚠ Caution

Do not look directly into the laser beam or at the light.



Barcode Reader
OLYMPUS SYMBOL
Type : LSK6220-I2B0JG
Light source : λ = 670nm
Visible radiation
End light value : 0.76mW
Safety standard : CDRH CLASS II

Standard

The beam strikes straight ahead with a 1mm width and is centered 1.5mm to the left (to the progress direction) from the center of the sample cup (Fig.1).

Check method

(1) Initialize the CG unit.
(2) Position the sample cup with the barcode label facing the rack and set the rack in the sample ID reading position.
(3) Execute sample ID stop reading with DIAG , and visually check the beam position.

Adjustment method

(1) Remove the covers around the barcode reader.
(2) Adjust the mirror position as in the standard with unscrewing (Fig.2).
(3) After the adjustment , execute sample ID stop reading with DIAG and visually check the beam position.

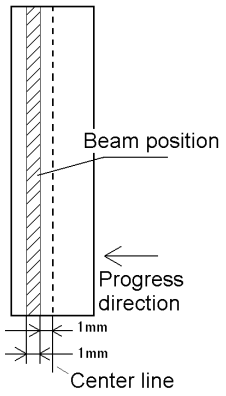


Fig.1

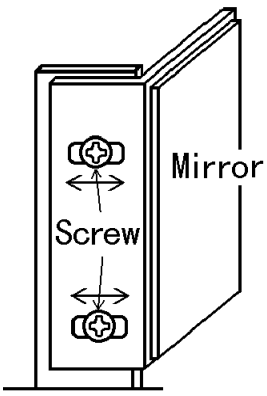


Fig.2

■ CB Sample Cup Detection Sensor Position

Standard

The center of the CB Sample cup detection sensor (S8) shall coincide with the sample tube center. (Refer to Fig. 1.)

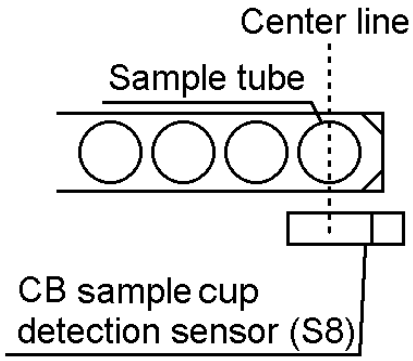


Fig. 1

Check method

(1) Initialize the CG unit.
(2) Set a rack with set sample tubes to the Sample cup detection position.
(3) Visually confirm that the standard is met.
(4) At this time, confirm that the CB Sample cup detection sensor (S8) detects the tube securely.
DS4 SW2 = 4, SW1 = D

(Note) S8 is on only timing of cup detection. The final check should be done in measure mode.

Adjustment method

Loosen the screws A fixing the plate to which the sensor is fixed to the CB unit and adjust to within the standard. (Refer to Fig. 2.)

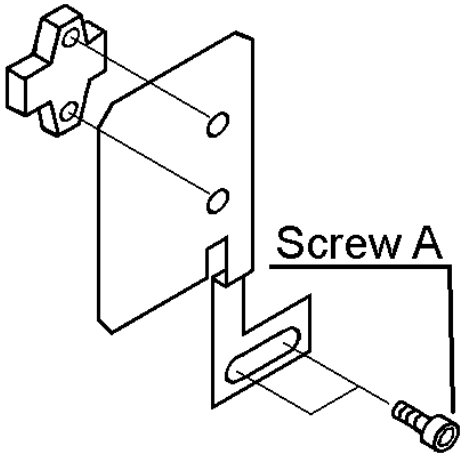


Fig. 2

■ J Brush Position

Standard

Set the sample tube to be used into the rack and push the rack against the left side of the CB unit. At this time, the J brush shall touch the sample tube for at least 1 mm. (Refer to Fig. 1.)

Check method

(1) Set the sample tube to be used into the rack.
(2) Push the rack against the left side of the CB unit and visually confirm the amount of contact of the brush.

Adjustment method

Loosen the screws A fixing the J brush and adjust to within the standard. (Refer to Fig. 2.)

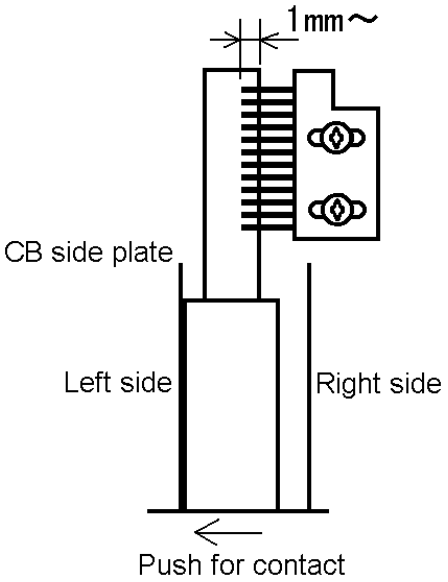


Fig. 1

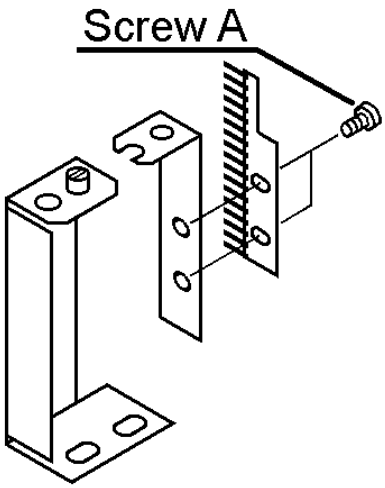


Fig. 2

■ Belt Tension

Standard

When the belt is pushed near the center with a force of 450 g, the deflection shall be 10 ± 1 mm. (Refer to Fig. 1.)

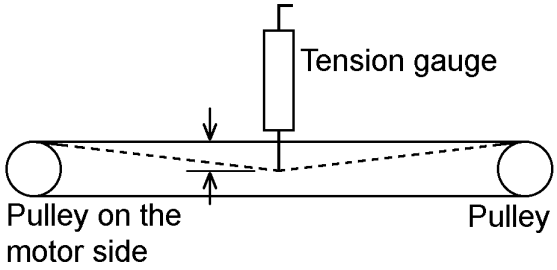


Fig.1

Check method

Use a scale to confirm the deflection amount when the belt is pushed near the center with a tension gauge.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard.

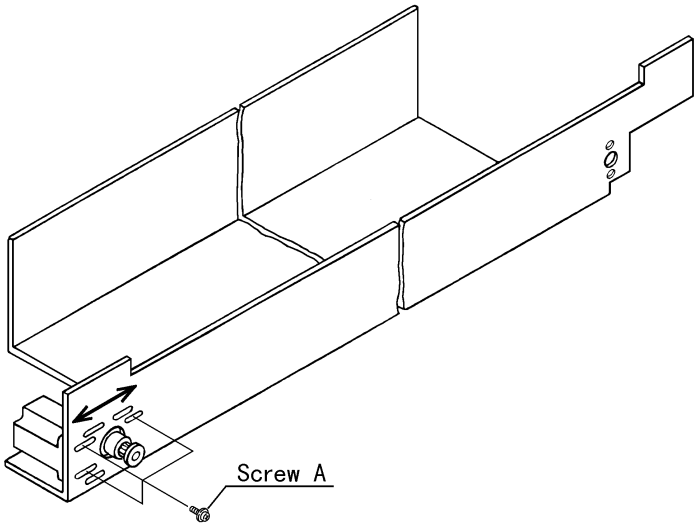


Fig.2

■ Protruding length of CC rack support shaft

Standard

The protruding length is 7.5 +/- 0.5 mm from the block when the shaft is the down position. (Refer to Fig 1.)

*** Information ***
When the shaft is protruded position., the protruding length is 51 to 52 mm from the block .

Check method

Check the protruding length with ruler.

Adjustment method

Adjust to target by loosing screw A which is fixing stopper. (Refer to Fig. 2.)

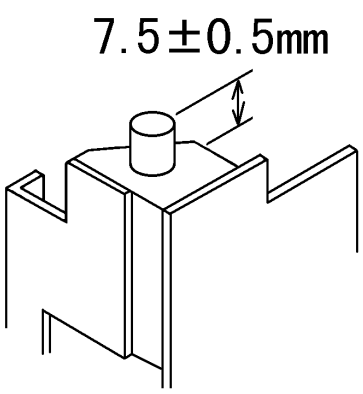


Fig.1

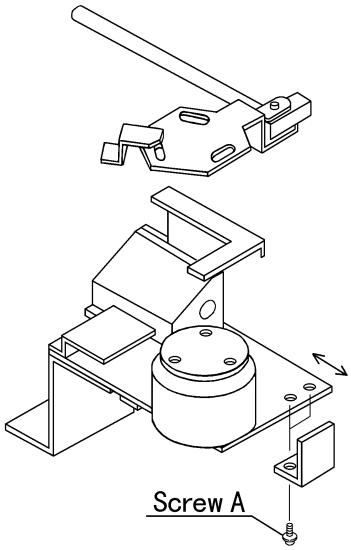


Fig.2

■ CC Rack Support Shaft Position

Standard

The gap between the rack feed lever of the CC unit and the CC rack support shaft shall be 25 +0/-1 mm. (Refer to Fig. 1.)

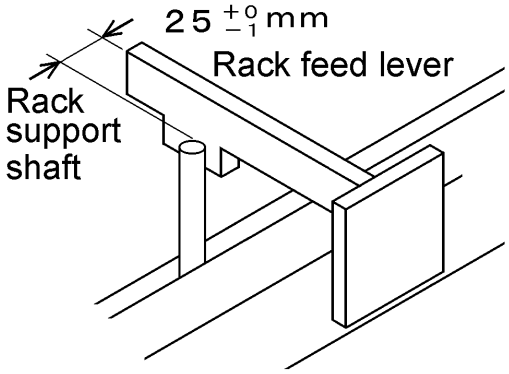


Fig. 1

Check method

Use a scale to confirm the gap between the CC rack feed lever and the CC rack support shaft.

Adjustment method

Loosen the screws A fixing the CC rack support shaft assembly and adjust to within the standard.

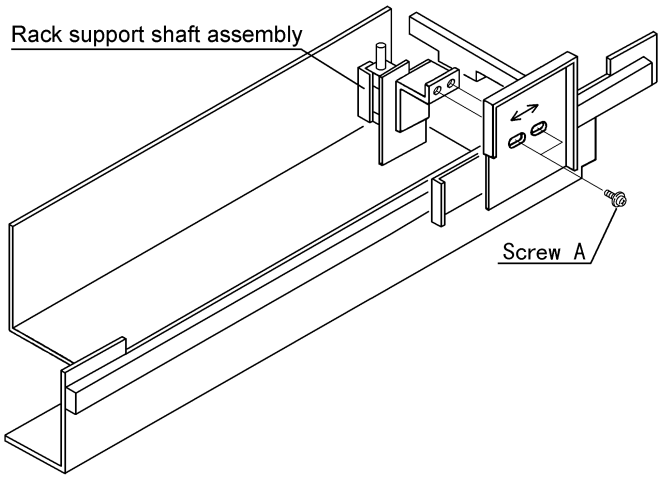


Fig. 2

***** Caution item *****

The CC rack support shaft must be vertical.

■ CC Rack Feed Origin Sensor Position

Standard

When the CC unit has been transferred to the CC rack feed origin position, the CC rack feed lever shall be retracted to 0.5 to 1.0 mm beyond the inner surface of the left side plate of the CB unit. (Refer to Fig. 1.)

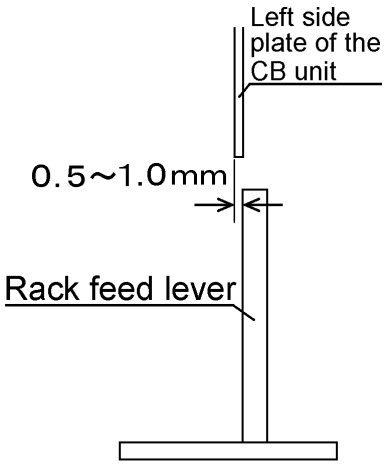


Fig. 1

Check method

(1) Initialize the CC unit.
(2) Transfer the CC unit to the CC rack feed origin position.
(3) Place a scale against the inner surface of the left side plate of the CB unit and confirm the gap to the CC rack feed lever.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

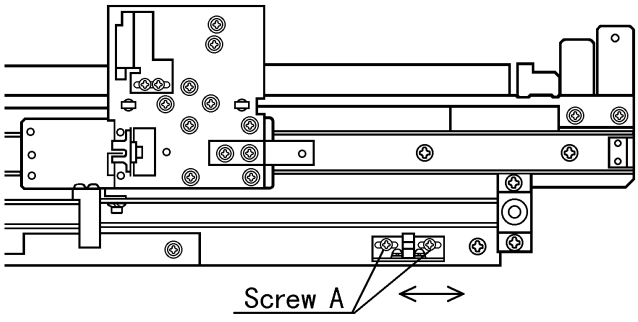


Fig. 2

■ CC Pre-rack Detection Sensor Position

Standard

When the CC unit is moved in CD direction without a rack and stop is performed with detection of the lever of the CD unit, the gap between the lever of the CD unit and the CC rack support shaft shall be 7 +1/-0. (Refer to Fig.1)

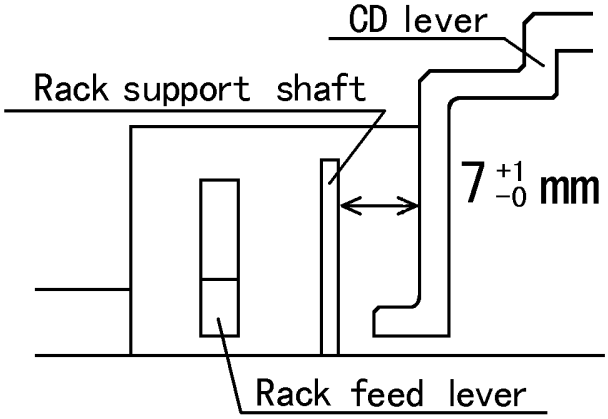


Fig.1

Check method

(1) Feed the CC unit without a rack in CD direction.
(2) At this time, confirm the gap between the lever of the CD unit and the CC rack support shaft with a scale.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig.2)

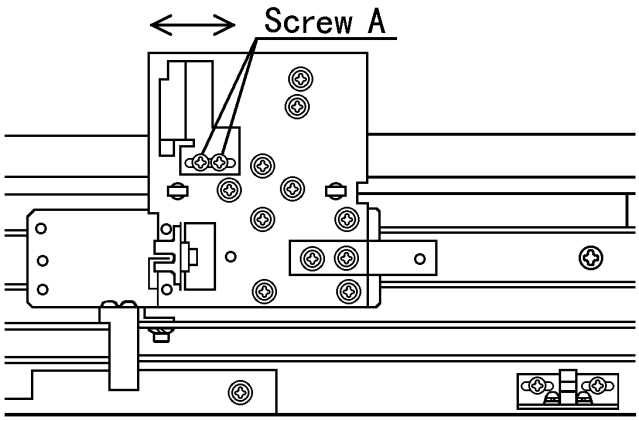


Fig.2

■ CC Rack Feed Position Sensor Position

Standard

When the CC unit is moved in CD direction without a rack and stop is performed with detection of the lever of the CD unit, the sensor flag shall be at the center of the sensor.

Check method

(1) Feed the CC unit without a rack in CD direction.
(2) At this time, confirm the sensor flag position visually.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig.1)

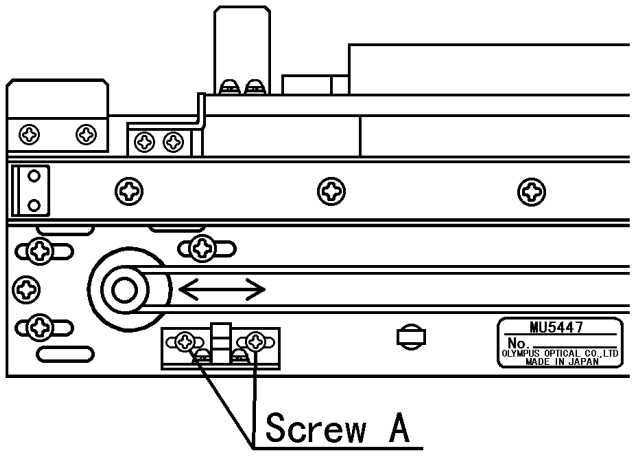


Fig.1

■ Stopper Position (origin position)

Standard

When the CC unit is transferred to the CC rack feed origin position, there shall be a gap of 1 +0.5/-0 mm between the stopper and the stopper pin. (Refer to Fig. 1.)

Check method

(1) Initialize the CC unit.
(2) Transfer the CC unit to the CC rack feed origin position.
(3) Confirm the gap between the stopper and the stopper pin at this time visually.

Adjustment method

Loosen the screws A fixing the stopper and adjust to within the standard. (Refer to Fig. 1.)

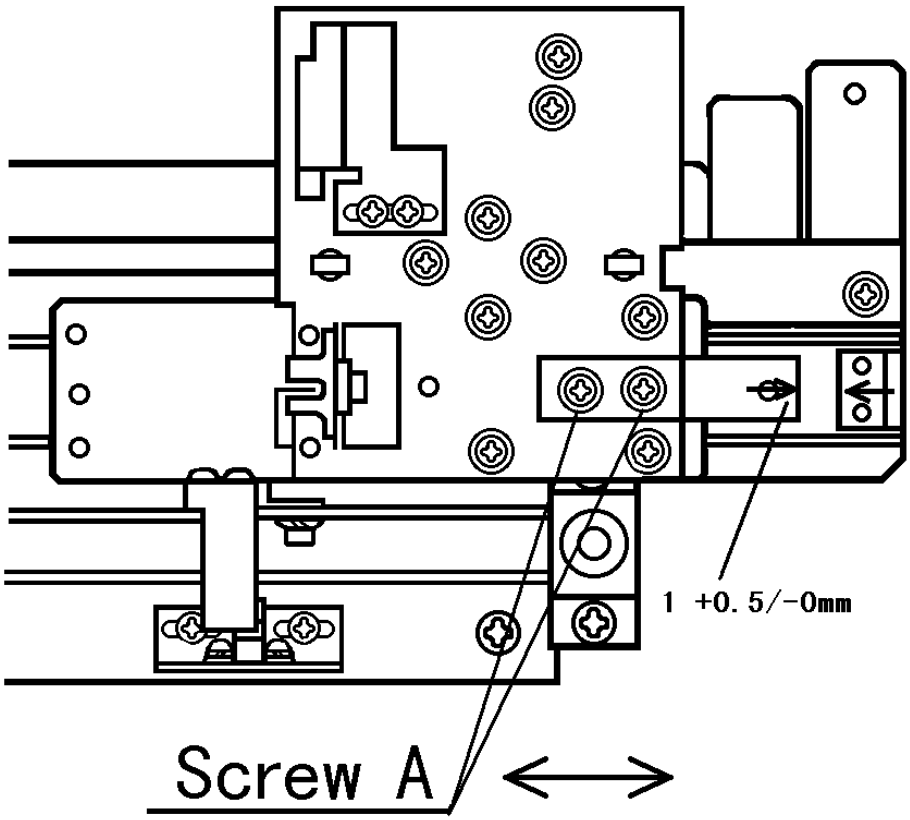


Fig. 1

■ Stopper Position (stop position)

Standard

With one rack in contact with the CD unit by means of the CC rack feed lever, keep enough clearance more than 5 mm between the pulley and sensor flag fixing screw. (Refer to Fig. 1.)

Check method

(1) Initialize the CC unit.
(2) Bring one rack into contact with the CD unit by means of the CC rack feed lever.
(3) Confirm the clearance between the pulley and sensor flag fixing screw at this time visually.

Adjustment method

Loosen the screws A fixing the sensor and adjust to within the standard. (Refer to Fig. 1.)

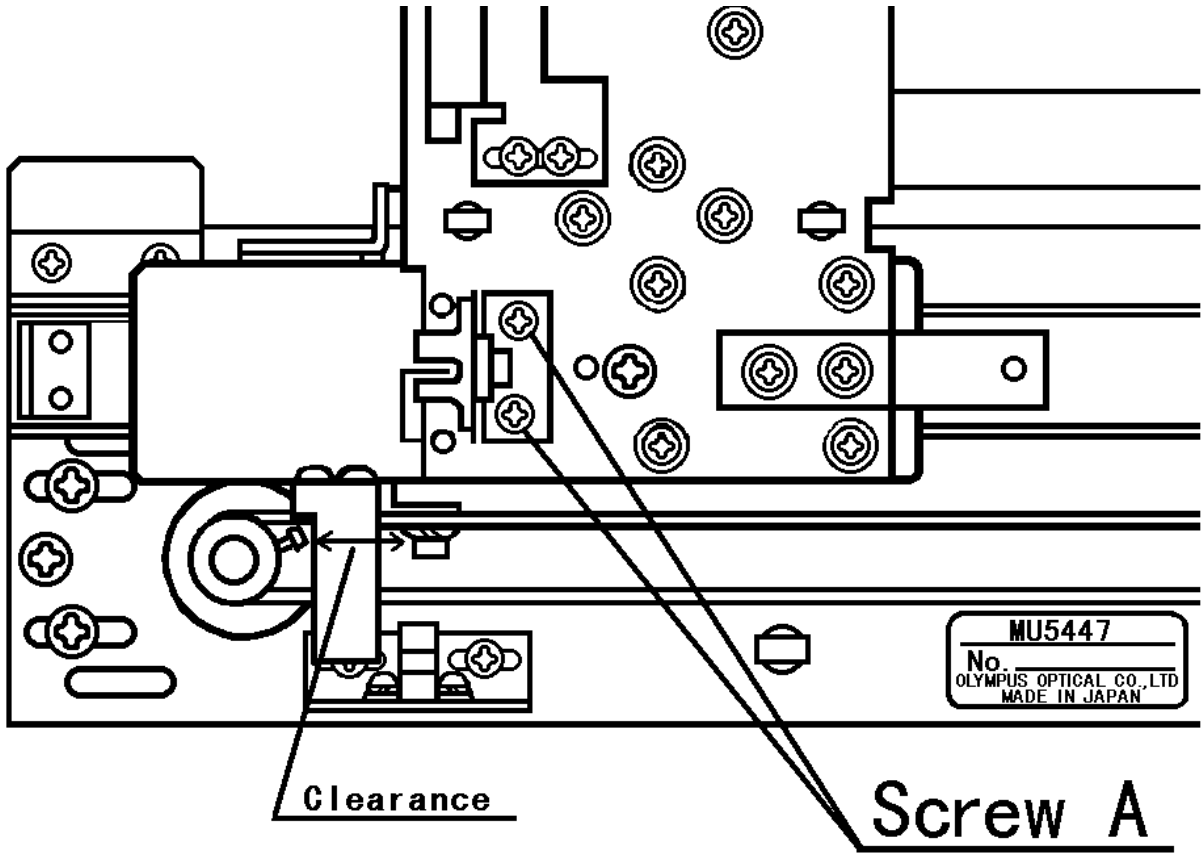


Fig. 1

■ CC Cover Open Sensor Position

Standard

The sensor shall be ON even when the CC cover is deflected by the amount of play.

Check method

Confirm that the sensor is ON even when the CC cover is deflected by the amount of play.

DS6 SW2 = 5, SW1 = 1

Adjustment method

Loosen the screws A fixing the sensor and adjust to within the standard. (Refer to Fig. 1.)

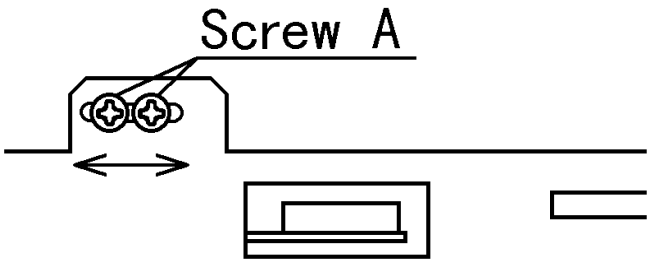


Fig. 1

■ Belt Tension

Standard

When the belt is pushed near the center with a force of 460 g, the deflection shall be 10 ± 1 mm. (Refer to Fig. 1.)

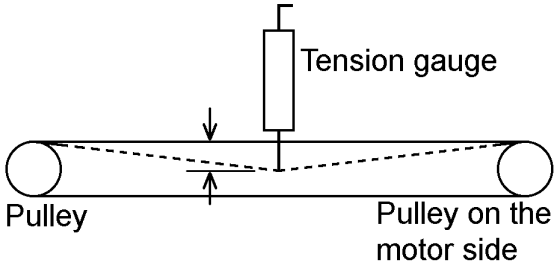


Fig.1

Check method

Use a scale to confirm the deflection amount when the belt is pushed near the center with a tension gauge.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

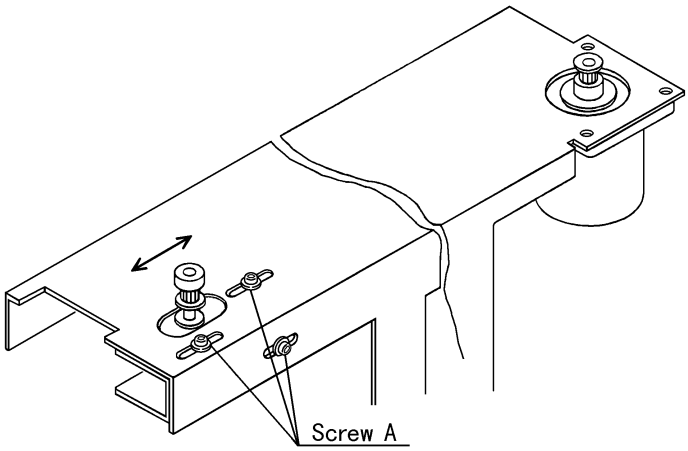


Fig.2

■ CD Lever Position

Standard

There shall be a gap of 2.5 +0/-0.5 mm between the body of the CD unit and the lever. (Refer to Fig. 1.)

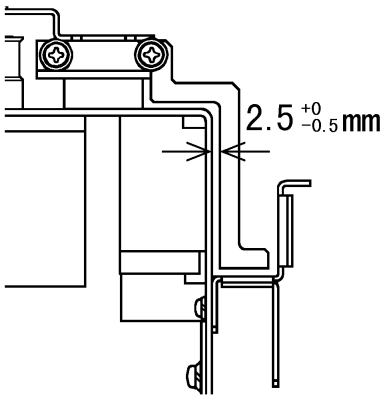


Fig. 1

Check method

(1) Initialize the CD unit.
(2) Use a scale to confirm the gap between the body of the CD unit and the lever.

Adjustment method

Loosen the screws A fixing the lever and adjust to within the standard. (Refer to Fig. 2.)

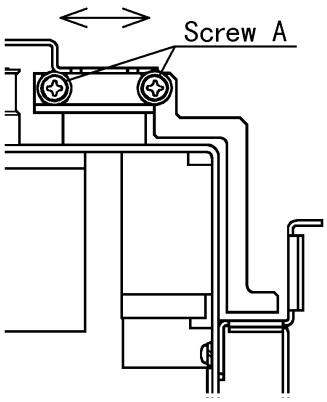


Fig. 2

■ CD Rack Feed Origin Sensor Position

Standard

When the CD unit has been transferred to the origin position, the CD lever shall be retracted 2 +0/-1 mm beyond the inner surface of the S base 2 of the CC unit. (Refer to Fig. 1.)

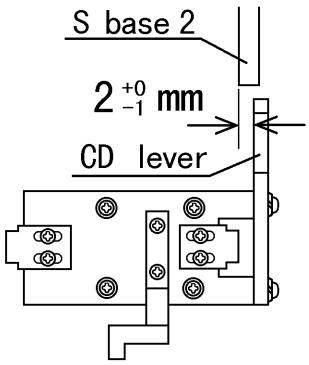


Fig. 1

Check method

(1) Initialize the CD unit.
(2) Use a scale to confirm the gap between the CD lever and the S base 2 of the CC unit.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

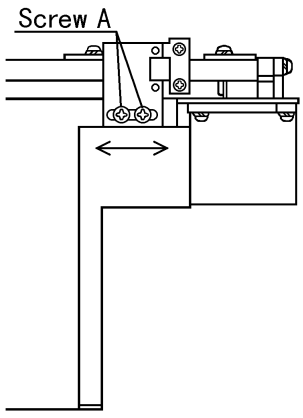


Fig. 2

■ CD Retrieval Position Sensor Position

Standard

When the CD lever has been transferred to the CD retrieval position, the sensor flag shall be at the center of the sensor.

Check method

(1) Initialize the CD unit.
(2) Transfer the CD lever to the CD retrieval position.
(3) Confirm the position of the sensor flag visually.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 1.)

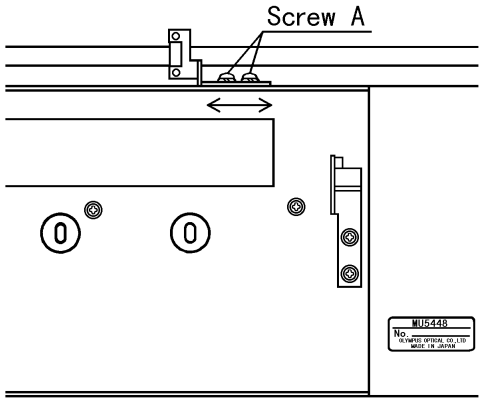


Fig. 1

■ CD Rack Repeat Position Sensor Position

Standard

When the N-rack has been transferred to the CD rack repeat position, the gap to the rack base of the CA unit shall be 2 +1/-0.5 mm. (Refer to Fig. 1.)

*** Information ***
N-rack : 2+1/-0.5 mm
NE-rack : 4+1/-0.5 mm

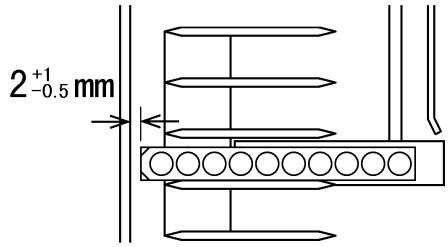


Fig. 1

Check method

(1) Initialize the CD unit.
(2) Set the N-rack and transfer it to the CD rack repeat position.
(3) Confirm the gap between the N-rack and the rack base of the CA unit.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

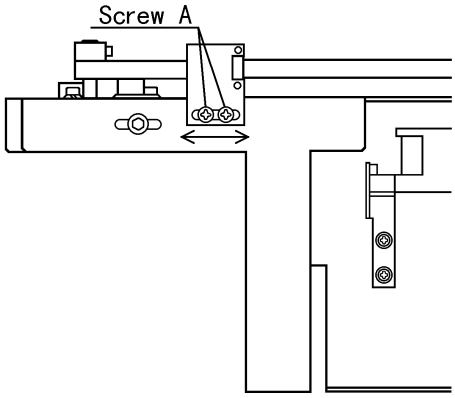


Fig. 2

■ CD Stopper Position (CD rack feed origin position)

Standard

When the CD unit has been transferred to the CD rack feed origin position, there shall be a gap of 1 +0.5/-0 mm between the stopper and the stopper pin. (Refer to Fig. 1.)

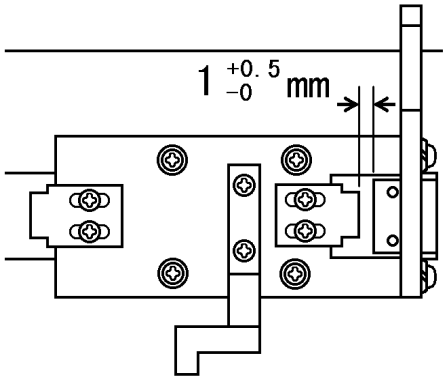


Fig. 1

Check method

(1) Initialize the CD unit.
(2) Confirm the gap between the stopper and the stopper pin at this time visually.

Adjustment method

Loosen the screws A fixing the stopper and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

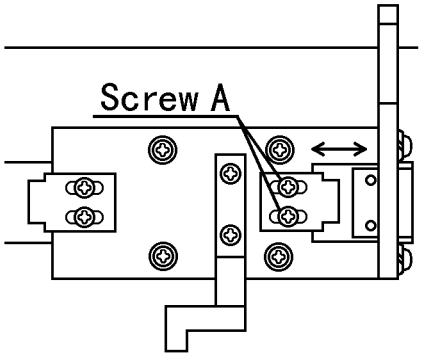


Fig. 2

■ Stopper Position (CD rack repeat position)

Standard

When the CD unit has been transferred to the CD rack feed repeat position, there shall be a gap of 1 +0.5/-0 mm between the stopper and the stopper pin. (Refer to Fig. 1.)

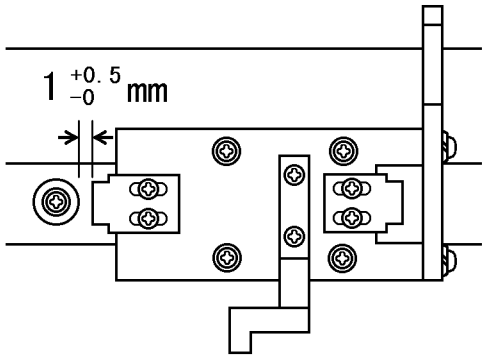


Fig. 1

Check method

(1) Initialize the CD unit.
(2) Transfer the CD unit to the CD rack repeat position.
(3) Confirm the gap between the stopper and the stopper pin at this time visually.

Adjustment method

Loosen the screws A fixing the stopper and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

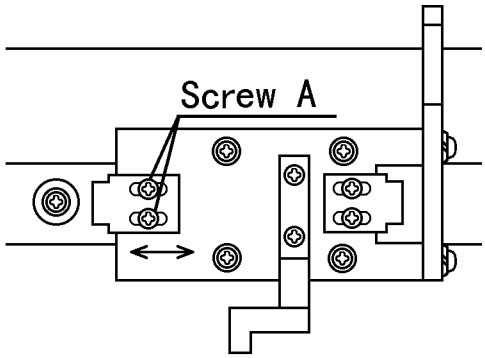


Fig. 2

■ CD Rack Guide Height (CC side)

Standard

0 +0.5/-0 mm lower than the slide plate of the CC unit. (Refer to Fig. 1.)

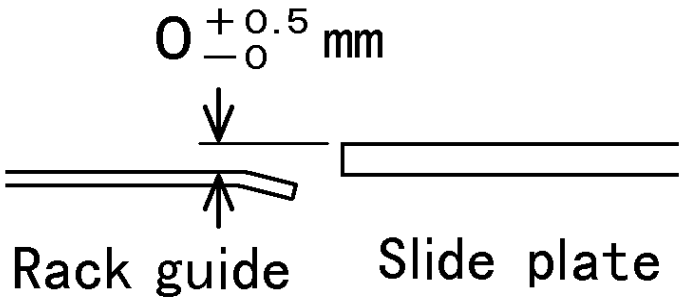


Fig. 1

Check method

Place a scale against the slide plate of the CC unit and visually confirm the gap to the CD rack guide.

Adjustment method

Loosen the screws A fixing the rack guide and adjust to within the standard. (Refer to Fig. 2.)

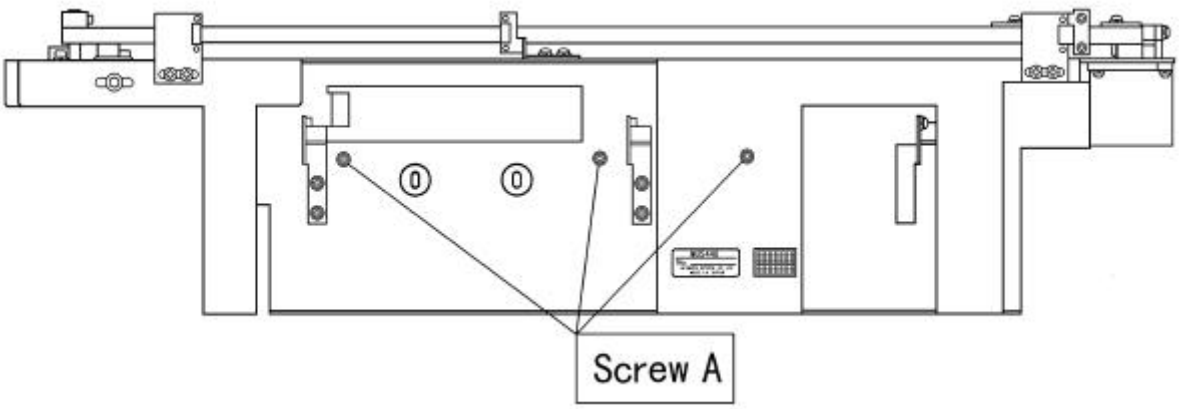


Fig. 2

***** Caution item *****

When the screws A are loosened, the height on the CA side also is disturbed and must be confirmed again.

■ CD Rack Guide Height (CA side)

Standard

0 +0.5/-0 mm higher than the slide plate 3 of the CA unit. (Refer to Fig. 1.)

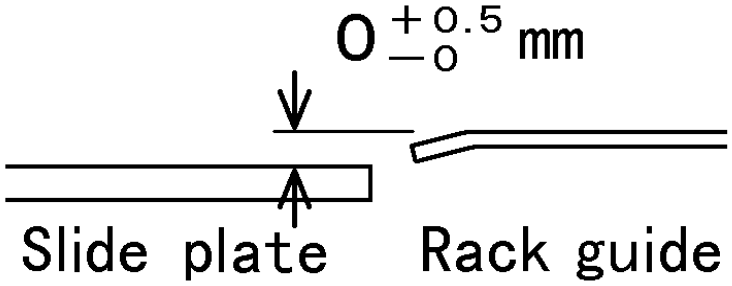


Fig. 1

Check method

Place a scale against the rack guide of the CD unit and visually confirm the gap to the slide plate 3 of the CA unit.

Adjustment method

Loosen the screws A fixing the rack guide and adjust to within the standard. (Refer to Fig. 2.)

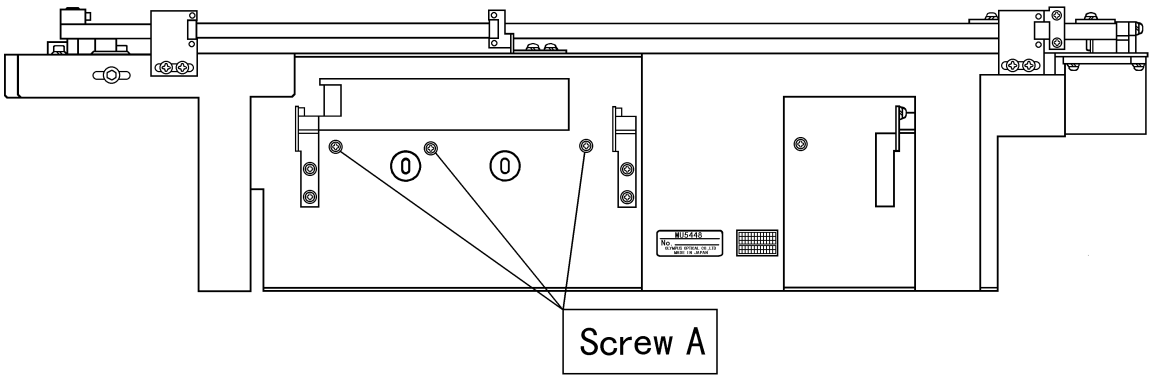


Fig. 2

***** Caution item *****

When the screws A are loosened, the height on the CC side also is disturbed and must be confirmed again.

■ CE Rack Wait Position

Standard

When the CE unit has been transferred to the rack wait position, it shall be retracted 0.5 to 1.0 mm beyond the inner surface of the CD side plate. (Refer to Fig. 1.)

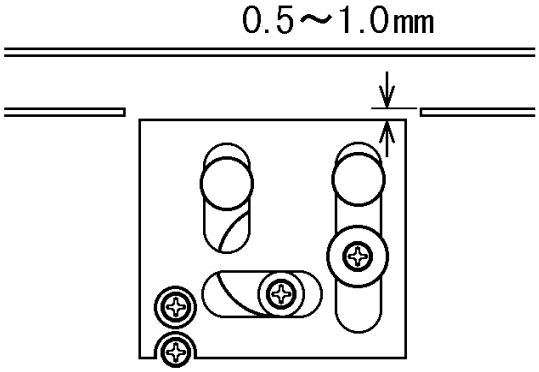


Fig.1

Check method

(1) Initialize the CE unit.
(2) Transfer the CE unit to the rack wait position.
(3) Confirm the position at this time with a scale.

Adjustment method

Loosen the screws A fixing the CE unit and adjust to within the standard. (Refer to Fig. 2.)

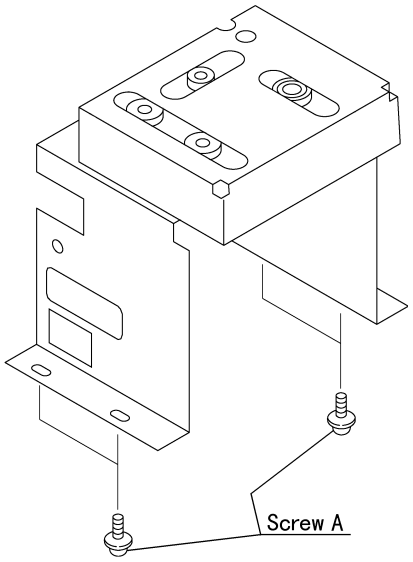


Fig.2

***** Caution item *****

The push lever of the CE unit shall be parallel.

■ CH Rack Guide Position

Standard

The tip of the rack guide shall project for 2 ± 0.2 mm beyond the rack retrieval section. (Refer to Fig. 1.)

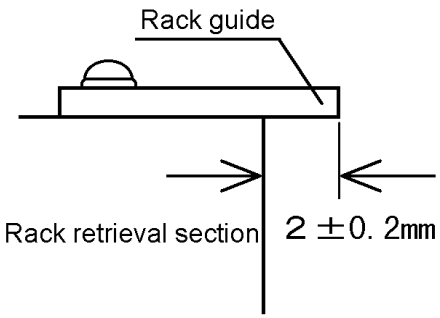


Fig.1

Check method

Confirm the projection amount of the rack guide with a scale.

Adjustment method

Loosen the screws A fixing the rack guide and adjust to within the standard. (Refer to Fig. 2.)

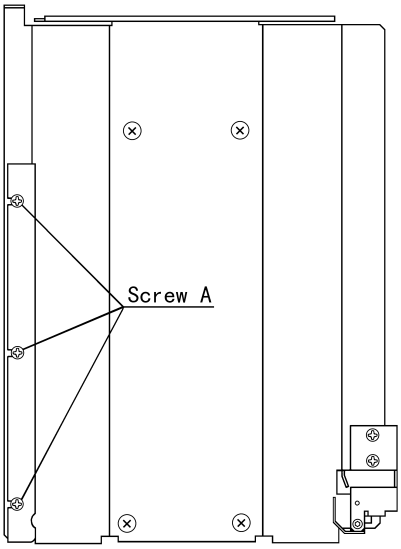


Fig.2

■ Position of Rack store unit (CH)

Standard

The tail of N rack stops at 0 to 0.5 mm before the left side of CH unit when the N rack is stopped at the CD retrieval position. (Refer to Fig 1.)

*** Information ***
In case using NE rack, it is 1.5 to 2.0 mm for reversible direction with N rack (CC unit side).

Check method

Check the protruding length with ruler.

Adjustment method

Adjust to target by loosing screw A which is fxing stopper. (Refer to Fig. 2.)

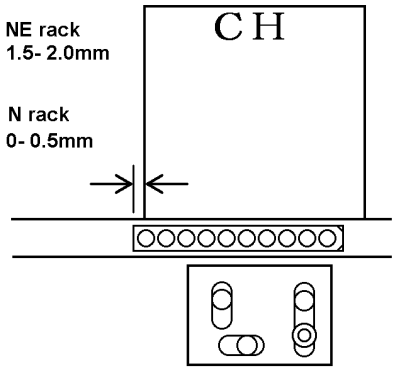


Fig .1

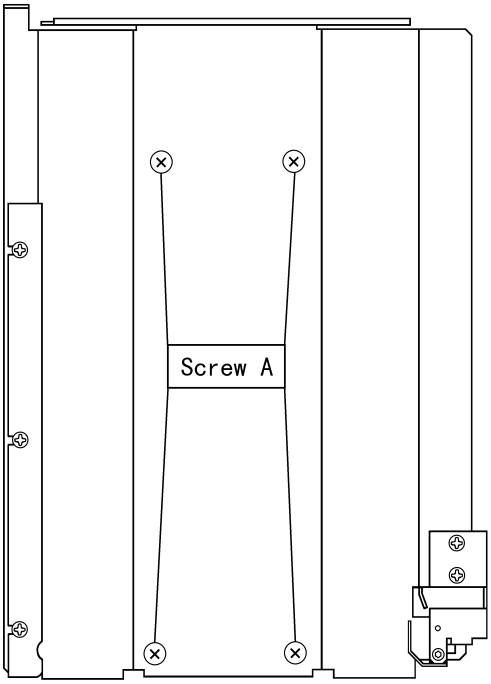


Fig.2

■ Rotation Origin Sensor

Standard

With pulse feed in CW direction after initialization, the R1 tray rotation origin sensor (S48) (R2 tray rotation origin sensor (S120)) shall change from ON to OFF at 20 ± 5 pulses.

Check method

(1) Initialize the DA unit.
(2) Perform pulse feed in CW direction.
(3) Count the number of pulses until the sensor becomes OFF.
DA01:DS1 SW2 = 4, SW1 = 4
DA11:DS1 SW2 = 4, SW1 = 5

The above is a check item because of fixed pulses forward initialize.

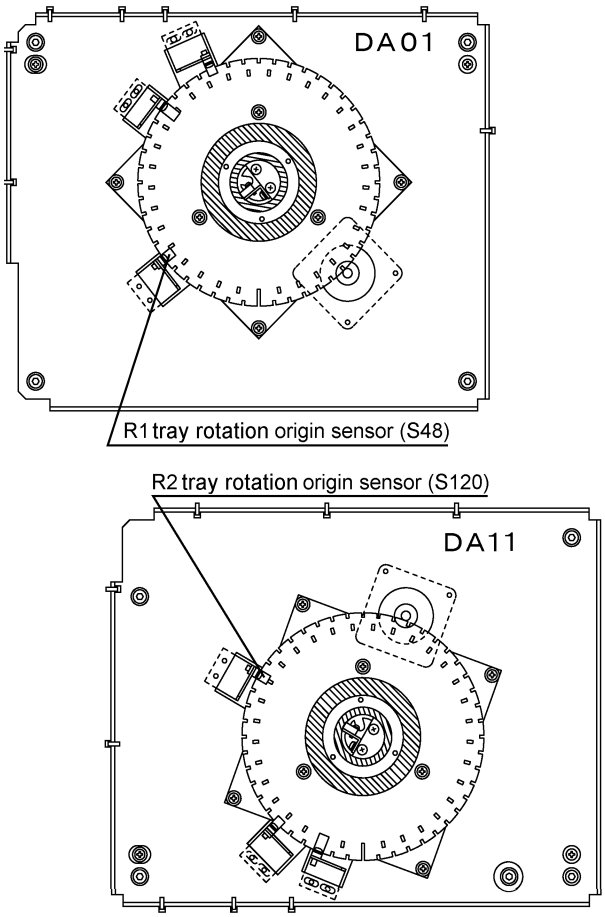


Fig. 1

■ Stop Position Sensor

Standard

With pulse feed in CW direction and in CCW direction after initialization, the difference in the number of pulses shall be within 8 pulses.

Check method

(1) Initialize the DA unit.
(2) Perform pulse feed in CW direction and in CCW direction.
(3) Count the number of pulses until the sensor becomes OFF.
33 item stop position sensor
DA01:DS2 SW2 = 4, SW1 = 4
DA11:DS2 SW2 = 4, SW1 = 5
48 item stop position sensor
DA01:DS3 SW2 = 4, SW1 = 4
DA11:DS3 SW2 = 4, SW1 = 5

Adjustment method

Loosen the screws fixing the respective sensor and adjust so that the standard is satisfied. (Refer to Fig. 1.)

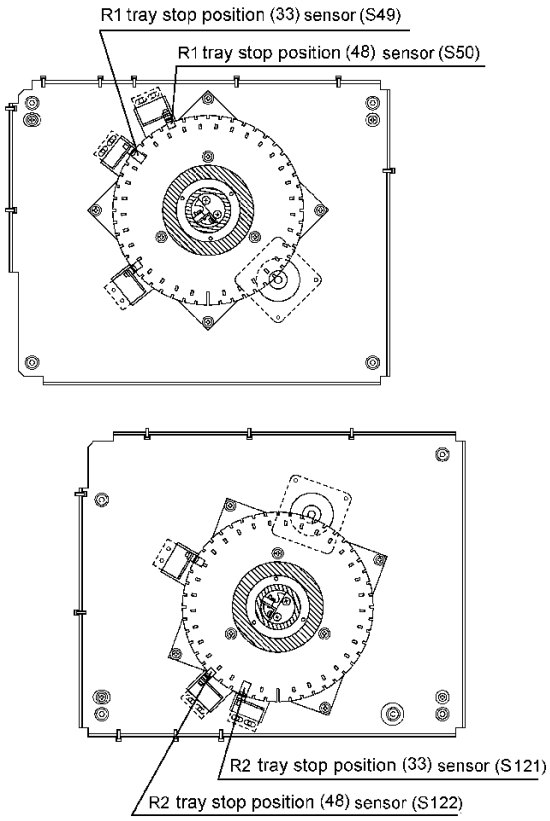
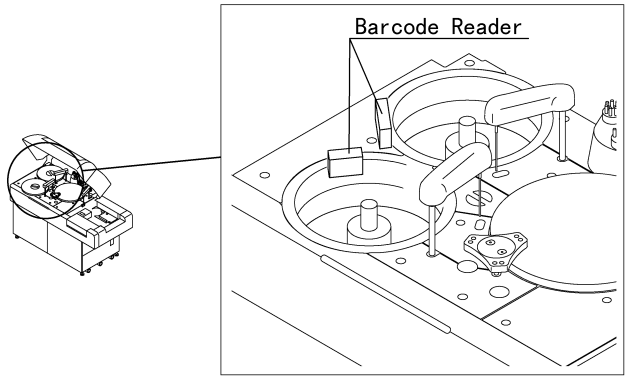

R1 tray stop position (33) sensor (S49)
R1 tray stop position (48) sensor (S50)
R2 tray stop position (33) sensor (S121)
R2 tray stop position (48) sensor (S122)

Fig. 1

■ Reagent ID position

⚠ Caution
Do not look directly into the laser beam or at the light.



Barcode Reader
OLYMPUS SYMBOL
Type: LSK6220-A
Light source: λ=670nm
Visible radiation
End light value: 0.68mw
Safety standard: CDRH CLASS II

Standard

The laser beam strikes vertically with a 1mm width to the center of the reagent bottle (Fig.1).

Check method

(1) Initialize the DA unit.
(2) Set a reagent bottle at the bottle detection position.
(3) Execute reaent ID stop reading with DIAG , and visually check the beam position.

Adjustment method

(1) Remove the covers around the barcode reader.
(2) Loosen screw A and adjust for a shift in the a direction (Fig.2).

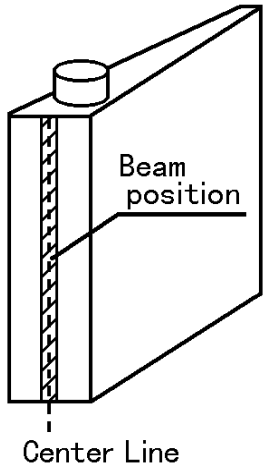


Fig.1

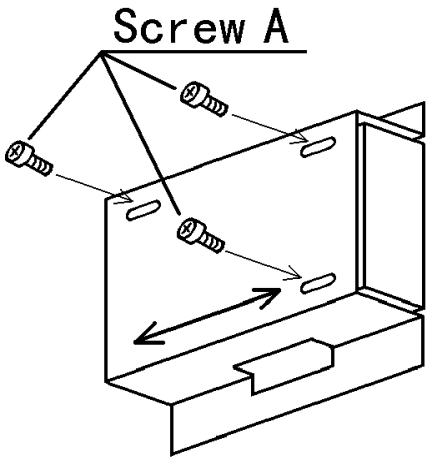


Fig.2

■ Bottle Detection Sensor Position

Standard

The bottle detection sensor shall detect the reagent bottle reliably.
Detection also shall take place when the bottle is displaced for the amount of play.

Check method

(1) Initialize the DA unit.
(2) Set a reagent bottle at the bottle detection position.
(3) Confirm reliable detection. Confirm that detection takes place even when the bottle is displaced for the amount of play.

DA01:DS5 SW2 = 4, SW1 = 4
DA11:DS5 SW2 = 4, SW1 = 5

Adjustment method

(1) Loosen the screws A. (Refer to Fig. 1.)
(2) Rotate the sensor assembly in CW direction and find the position where the red LED of the sensor light receiver changes from not lit to lit condition (position A). (Refer to Fig. 2.)
(3) Next, rotate in CCW direction to the position where the red LED changes from lit to not lit condition (position B) and fix the sensor assembly at this position. (Refer to Fig. 2.)

*The green LED shall be lit at all times.
*This adjustment shall be made with installed sensor cover.

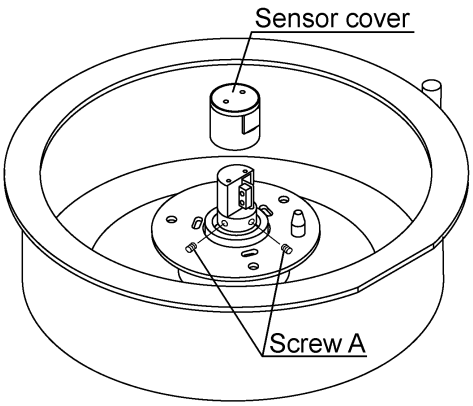


Fig. 1

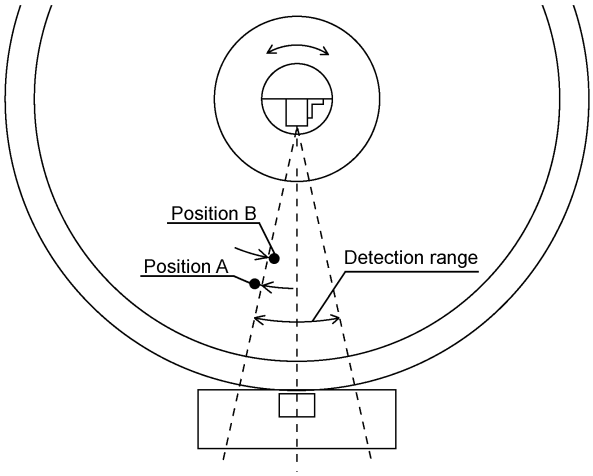


Fig. 2

■ Cover-open Sensor Position

Standard

Detection shall be made even when the reagent cover is displaced for the amount of play.

Check method

Displace the reagent cover for the amount of play and confirm detection.

DA01:DS4 SW2 = 4, SW1 = 4
DA11:DS4 SW2 = 4, SW1 = 5

Adjustment method

Loosen the screws A fixing the cover-open sensor and adjust. (Refer to Fig. 1.)

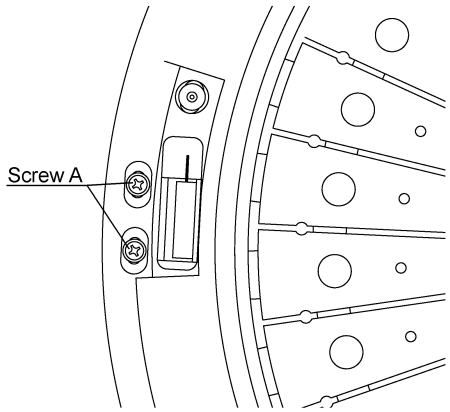


Fig. 1

■ STAT Rotation Origin Sensor Position

Standard

When pulse feed in CCW direction is performed after initialization, the STAT rotation origin sensor shall change from ON to OFF at more than 5 pulses.

Check method

(1) Initialize the DC unit.
(2) Perform pulse feed in CCW direction.
(3) Count the number of pulses until the sensor becomes OFF.
DS1 SW2 = 4, SW1 = F

The above is a Check item because of fixed pulse forward initialize.

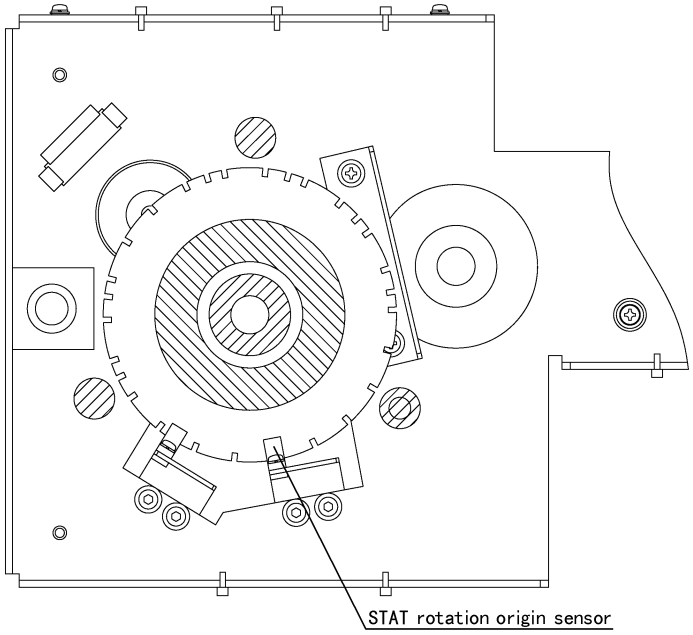


Fig. 1

■ Position of the STAT Rotation Stop Position Sensor

Standard

When pulse feed in CW, CCW direction is performed after initialization, the sensor shall become ON after 8 pulses or more.

Check method

(1) Initialize the DC unit.
(2) Perform pulse feed in CW, CCW direction.
(3) Count the number of pulses until the sensor becomes OFF.
DS2 SW2 = 4, SW1 = F

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2)

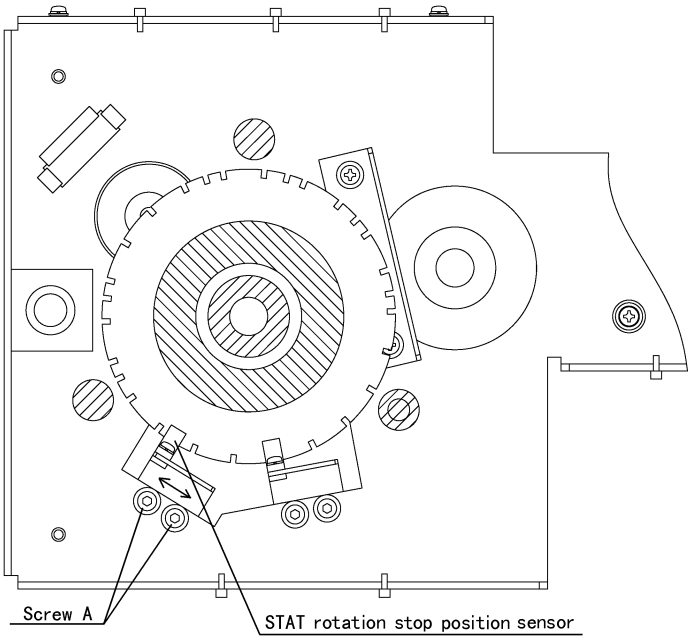
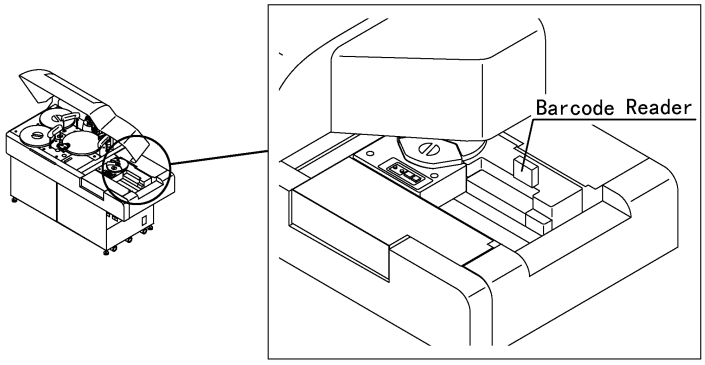


Fig. 2

■ Sample ID reading position

⚠ Caution

Do not look directly into the laser beam or at the light.



Barcode Reader
OLYMPUS SYMBOL
Type : LSK6220-I2B0JG
Light source : λ=670nm
Visible radiation
End light value : 0.76mW
Safety standard : CDRH CLASSII

Standard

The laser beam strikes vertically with a 1mm width and 1.5mm to the right (rotation direction) of the center of the sample cup.

Check method

(1) Initialize the DC unit.
(2) Move STAT table to aspiration position of outer ring.
(3) Set sample cup at Bar code read position.
(4) Check the beam position visually by STAT bar code stop reading in DIAG.

Adjustment method

Loosen the screws A and adjust for a shift in the a direction (Fig.2 and 3).
Loosen the screws B and adjust for a shift in the b direction (Fig.2 and 3).

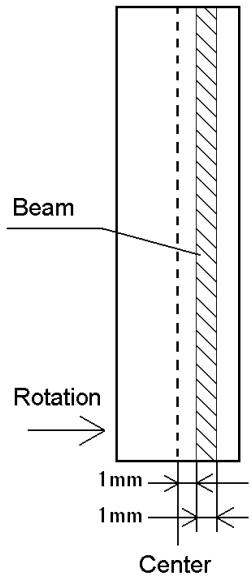


Fig 1

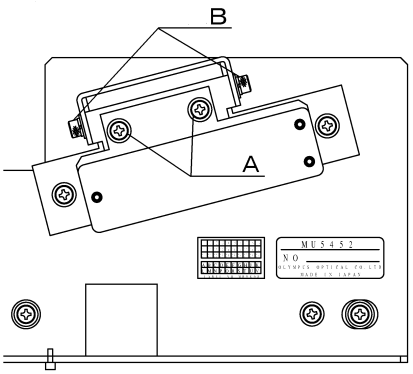


Fig 2

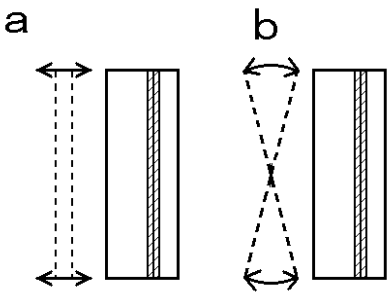


Fig 3

■ STAT Sample Tube Exist Position

Standard

The spotlight of the STAT Sample tube exist sensor (S31) shall hit the center of the sample tube.

Check method

(1) Initialize the DC unit.
(2) Rotate the STAT table so that tube detection is possible.
(3) Set a tube to the tube detection position.
(4) Visually confirm that the spotlight satisfies the standard.

Adjustment method

Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 1.)

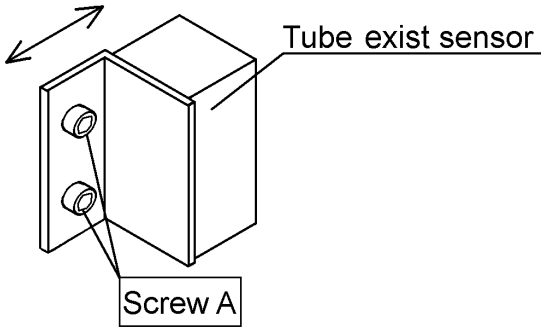


Fig. 1

■ STAT Sample Tube Exist Sensor Level Adjustment

Standard

The set tube shall be detected without fail.

Adjustment method

Set an actually used sample tube to the STAT table and use UDCD42 to confirm that the tube is detected without fail.

Adjustment method

(1) Initialize the DC unit.
(2) Rotate the STAT table to the tube detection position.
(3) Set the adapter for thin diameters (ME2175).
(4) Set the sensitivity control of the STAT sample tube exist sensor to MAX.
(5) Slowly turn the sensitivity control from MAX to MIN and memorize the position (A) where the green LED is clearly lit. (Refer to Fig. 1.) A position is normally MAX
(6) Set a conical tube (MD0779) to the adapter.
(7) Set the sensitivity control to MIN.
(8) Turn the sensitivity control slowly from MIN to MAX, and memorize the position (B) where the green and the red LED both light. (Refer to Fig. 2.)
(9) Set the sensitivity control to the center position between position (A) and position (B). (Refer to Fig. 3.)

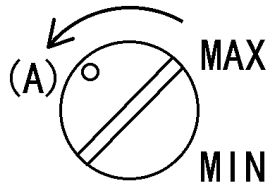


Fig. 1

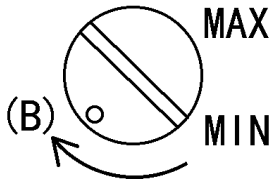


Fig. 2

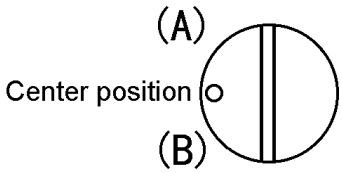


Fig. 3

■ Horizontal Rotation Belt Tension

● Standard

When the center of the horizontal rotation belt is pushed with a force of 200 ± 20 gf, the belt deflection shall be 1 mm. (Refer to Fig. 1.)

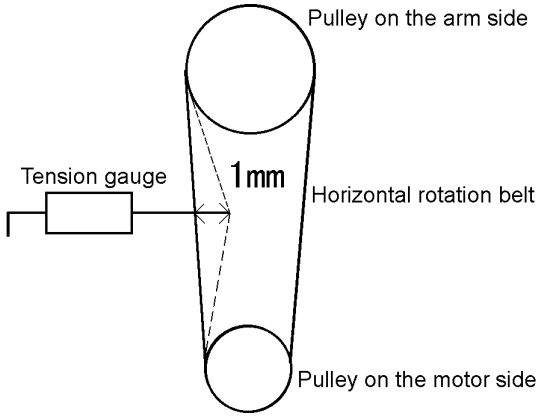


Fig. 1

● Check method

Push the center of the belt with a tension gauge and use a scale to confirm the deflection.

● Adjustment method

Loosen the screws A fixing the probe rotation motor of the FA unit and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

● Caution

Don't make too much tension even play of arm in rotation looks too much. If you make too much tension, it is effective to dispensing accuracy.

We recommend to exchange whole FA unit at customer site. This adjustment should be done in factory.

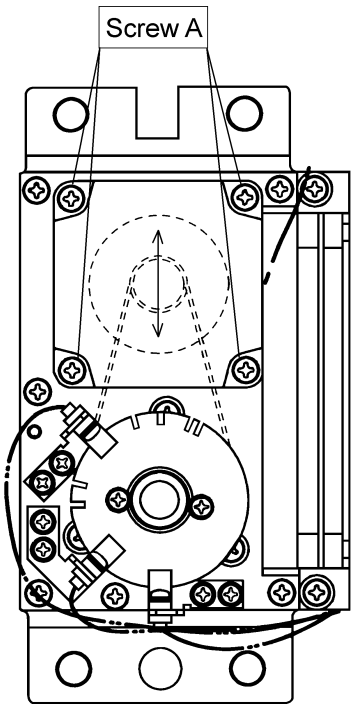


Fig. 2

■ Upper Position Sensor

● Standard

1. When pulse feed in downward direction is performed after initialization, the sensor shall change from ON to OFF at 24 ± 3 pulses.
2. When pulse feed in upward direction is performed directly after the sensor has changed from ON to OFF with pulse feed in downward direction, the sensor shall change from OFF to ON within 6 pulses.

● Check method

(1) Initialize the FA unit.
(2) Perform pulse feed in downward direction.
(3) Count the number of pulses until the sensor becomes OFF.
DS1 SW2 = 4, SW1 = B
(4) Reinitialize the FA unit.
(5) Perform pulse feed in downward direction until the sensor changes from ON to OFF.
(6) When the sensor has become OFF, perform pulse feed in upward direction and count the number of pulses until the sensor becomes ON.

The above is a check item because of fixed pulse forward initialize.

■ Rotation Origin Sensor

● Standard

When the probe is transferred to the origin position (test diluent aspiration position) after initialization and pulse feed is performed in CCW direction, the sensor shall change from ON to OFF at 10 ± 3 pulses.

DS5 SW2 = 4, SW1 = A

● Check method

(1) Initialize the FA unit.
(2) Transfer the probe to the origin position (test diluent aspiration position).
(3) Perform pulse feed in CCW direction.
(4) Count the number of pulses until the sensor changes from ON to OFF.

The above is a Check item because of fixed pulses forward initialize.

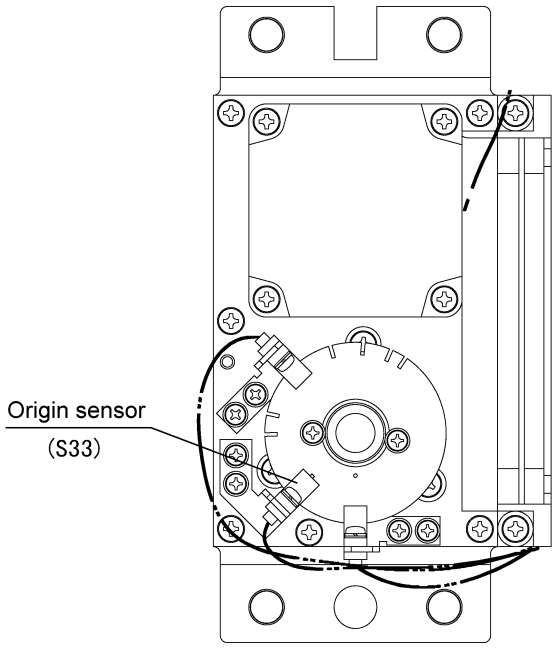


Fig. 1

■ Rotation Stop Position Sensor

● Standard

When transfer to each stop position is made after initialization and pulse feed is performed in CW and in CCW direction, the sensor shall be ON for at least 6 pulses.

● Check method

(1) Initialize the FA unit.
(2) Transfer the probe to each stop position.
(3) Perform pulse feed of the probe in CW and CCW direction.
(4) Confirm that the sensor is ON for at least 6 pulses.
Cuv position sensor
DS6 SW2 = 4, SW1 = A
Stop position sensor
DS4 SW2 = 4, SW1 = A

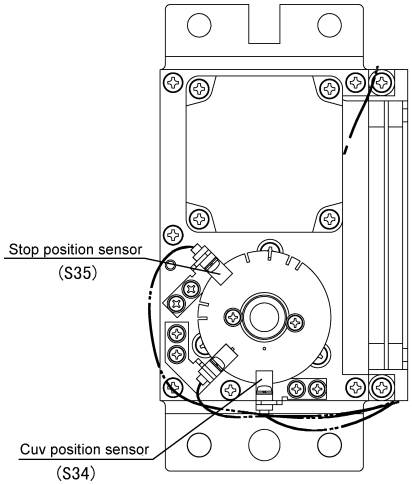


Fig. 1

● Adjustment method

Loosen the screws A for the Cuv position sensor or the screws B for the stop position sensor and adjust by moving in arrow direction. (Refer to Fig. 2.)

	Origin sensor (S33)	Stop position sensor (S35)	Cuv position sensor (S34)
Dilution sample aspiration position	●	❍	●
Sample discharge position (cuvette)	❍	❍	●
Sample discharge position (ISE)	❍	●	❍
Wash position	❍	●	❍
Sample aspiration position (rack)	❍	●	❍
Sample aspiration position (STAT)	❍	●	❍
Detergent, STD position	❍	●	❍

●: Detection ❍: No detection

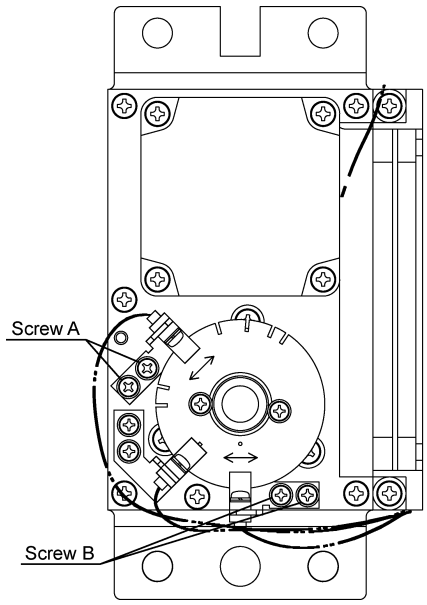


Fig. 2

■ Horizontal Rotation Stopper Position

● Standard

With stop at the origin position, the gap between the stopper and the stopper pin shall be 0.4 ± 0.1 mm. The origin sensor shall be ON even when the stopper is in contact with the stopper pin. (Refer to Fig. 1.)

● Check method

(1) Initialize the FA unit.
(2) Transfer the FA unit to the origin position.
(3) Visually confirm the gap between the stopper and the stopper pin.
(4) Cut the energization of the FA unit.
(5) Bring the arm manually into contact with the stopper and confirm the sensor.
DS5 SW2 = 4, SW1 = A

● Adjustment method

(1) Initialize the FA unit.
(2) Transfer the FA unit to the origin position.
(3) Loosen the screws A and adjust to within the standard. (Refer to Fig. 2.)

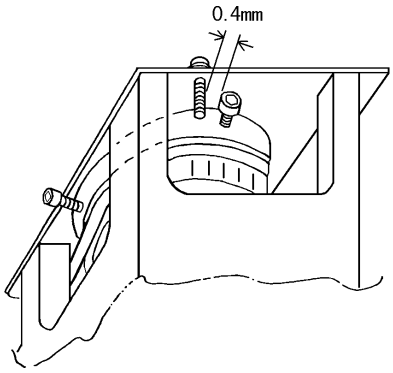


Fig. 1

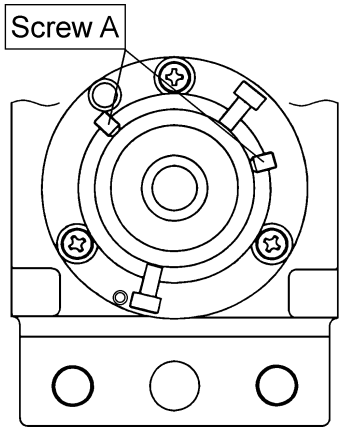
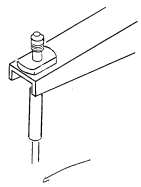


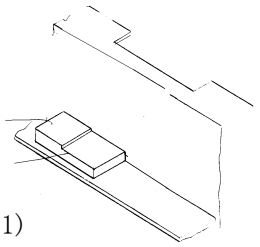
Fig. 2

■ Height of Probe Arm

● Standard



Probe height is 8.0 – 8.5 from the belt at rack lower position.
(Refer to Fig. 1.) FA Target of height is 8.3mm from belt surface
（Jig for field）
(KCM0317) JC10-M520-FA01-MD7414 Jig probe 190mm
(KCM0805)JC09-M253-AA01-ME7020 ---Common with AU2700
Jig block height Upper limit 8.5 +/-0.02mm,
Lower limit 8.0 +/-0.02mm



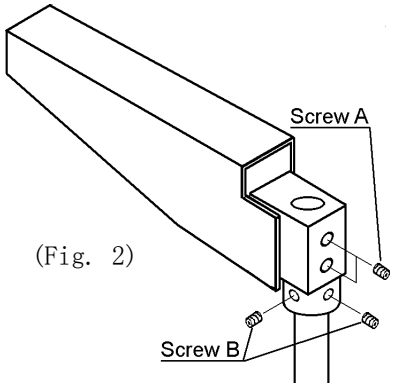
(Fig. 1)

● Check method

(1) Initialize the FA unit.
(2) Move the probe to the rack lower (sample aspiration) position.
(3) Confirm the distance from the belt surface to the tip of the probe with a scale.

● Adjustment method

(1) Initialize the FA unit.
(2) Loosen the screws A and the screws B and adjust by movement in vertical direction. (Refer to Fig. 2.)



(Fig. 2)

***** Caution items *****

1. The block fixed by the screw A and the block fixed by the screws B must be fixed in contact with each other.
2. When the height above the cuvette is adjusted, the stop positions for horizontal rotation are disturbed and each stop position must be readjusted.
3. (Note) The distance from the upper edge of the cuvette to the tip of the probe shall be 14.0 ± 0.5 mm in design. (Refer to Fig. 3)
The height of probe in cuvette shall be about 3 mm from mixture surface.
(The height in cuvette is changeable by mixture volume.

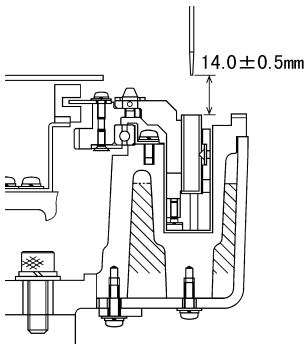


Fig. 3

■ Test Dilution Aspiration Position

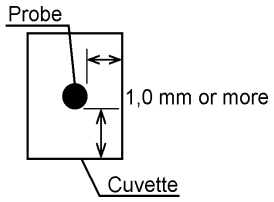


Fig. 1

● Standard

The probe shall be at the center of the cuvette, and the clearance with the cuvette shall be 1.0 mm or more. (Refer to Fig. 1.)

● Check method

(1) Remove the S-probe.
(2) Initialize the FA unit and transfer it to the test dilution aspiration position.
(3) Lower the unit, install the S-probe, and confirm visually.
Cuv No. 143

● Adjustment method

(1) Initialize the FA unit.
(2) Transfer the FA unit to the test dilution aspiration position and lower it.
(3) Loosen the screws A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

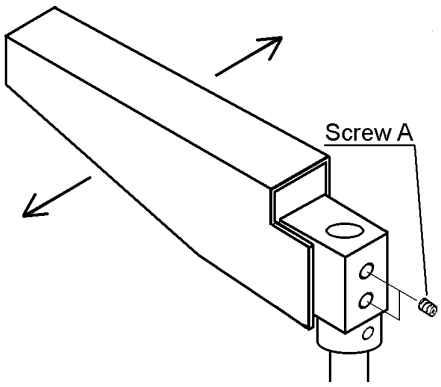


Fig. 2

***** Caution item *****

Take care that the probe does not hit the cuvette or other parts.
Just confirm this point, normally. Use jig probe and jig cuv if you need fine adjustment.
Because probe on instrument might be not straight.

■ Cuvette Position

● Standard

The probe shall be at the center of the cuvette , and the clearance with the cuvette shall be 1.0mm or more. (Refer to Fig.1)

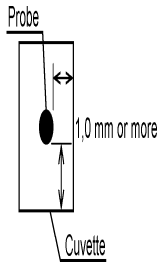


Fig. 1

● Check method

(1) Remove the S-probe.
(2) Initialize the FA unit and transfer it to the cuvette position.
(3) Lower the unit, install the S-probe, and confirm visually.
Cuv No. 106

● Adjustment method

(1) Initialize the FA unit.
(2) Transfer the FA unit to the cuvette position and lower it.
(3) Adjust to target by loosing screw A and B which are fixing FA unit. (The screw B is a positioning screw.) (Refer to Fig. 2)

***** Caution item *****

1. Re-check the pre-dilution position (origin position) after moving FA unit.
2. Do not clash the probe with cuvettes, etc.
3. Just confirm this point, normally. Use jig probe and jig cuv if you need fine adjustment. Because probe on instrument might be not straight.

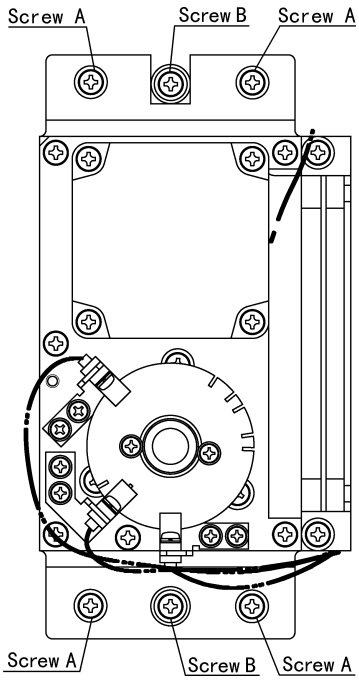
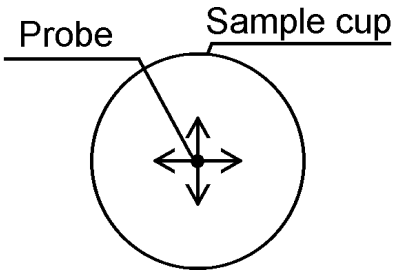


Fig.2

■ Sample aspiration Position

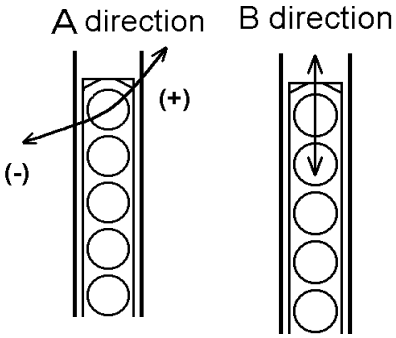


- Standard

  The sample probe is in the center if the sample cup.
  (+/- 0.5mm from center)

- Check method

  (1) Initialize the FA and CG unit.
  (2) Position the sample cup in the rack.
  (3) Set a rack with sample cups to CB unit. Then, push the rack to the CG unit.
  (4) Move the probe to the sample aspiration position.
  (5) Pull out the sample probe and lower the probe.
  (6) Insert the sample probe and visually check the position.



- Adjustment method

  (1) In case the position is shifted to the A direction, adjust with system maintenance (Equipment parameters - Sample Probe Adjust). (It is possible to set from -100 to 100. Shift ratio is 0.4 mm / pulse.) (Refer to Fig.2)
  (2) If the unit shifts in the B direction , loosen screw B and adjust it to meet the standard. (Refer to Fig.3)

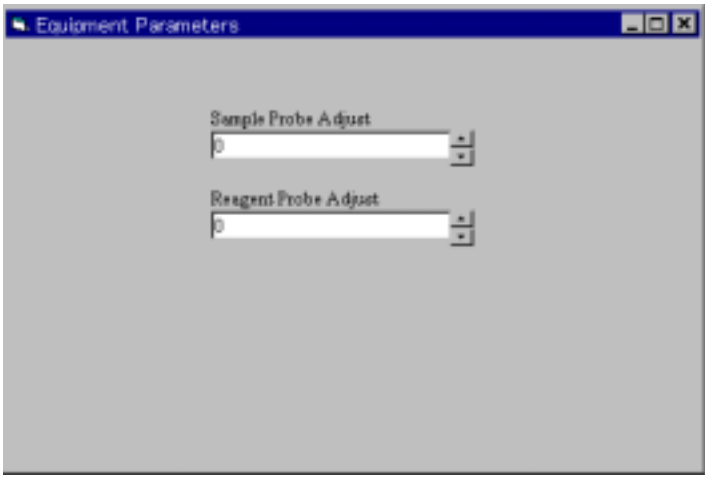


Fig.2

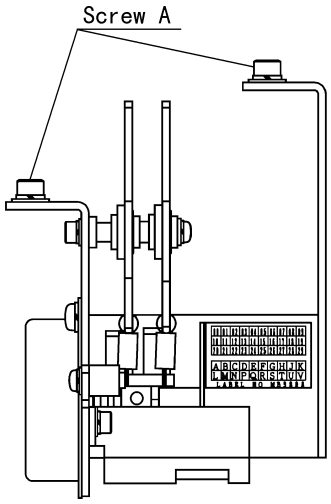


Fig.3

■ Wash Port Position

● Standard

The probe shall be at the center of the wash tank and the deviation from the center shall be within 0.5 mm. (Refer to Fig. 1.)

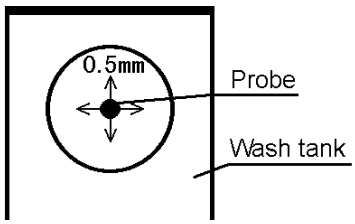


Fig. 1

● Check method

(1) Remove the S-probe.
(2) Initialize the FA unit.
(3) Lower the unit to the wash tank position.
(4) Install the probe and confirm visually.

● Adjustment method

(1) Remove the S-probe.
(2) Initialize the FA unit.
(3) Lower the unit to the wash tank position.
(4) Install the probe.
(5) Loosen the screws A fixing the wash tank and adjust to within the standard. (Refer to Fig. 2.)

***** Caution item *****

At the time of moving the wash tank, take care not to hit the probe.

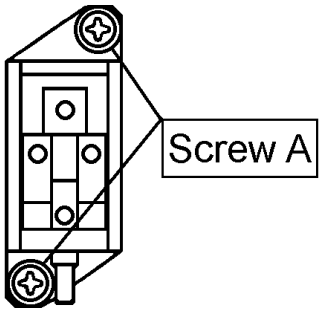
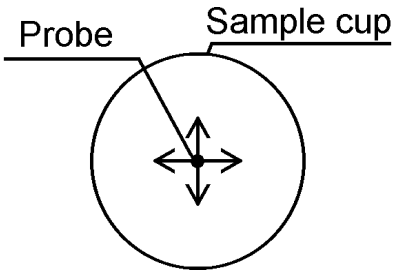


Fig. 2

■ STAT Position

● Standard



The probe shall be at the center of the wash tank and the deviation from the center shall be within 0.5 mm. (Refer to Fig. 1.)

● Check method

(1) Initialize the FA and DC unit.
(2) Set a sample cup at W1 position on DC unit.
(3) Move FA unit to the inner aspiration position on DC unit.
(4) Check the inner aspiration position visually, by downward of probe.
(5) Initialize FA and DC unit, again.
(6) Move DC unit to the outer aspiration position on DC unit and set a sample cup.
(7) Move FA unit to the outer aspiration position on DC unit.
(8) Check the outer aspiration position visually, by downward of probe.

● Adjustment method

1. Adjust the shift in the rotation direction of the DC unit by loosening screw A. (Refer to Fig.2)
2. Adjust the shift except for the rotation direction of the DC unit by loosening screw B and C. (Refer to Fig.3) (Screw C is the positioning screw of the DC unit.)

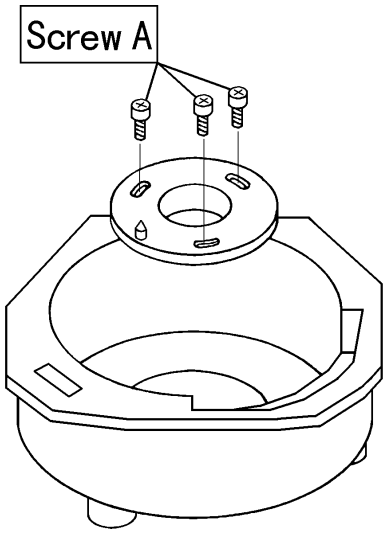


Fig.2

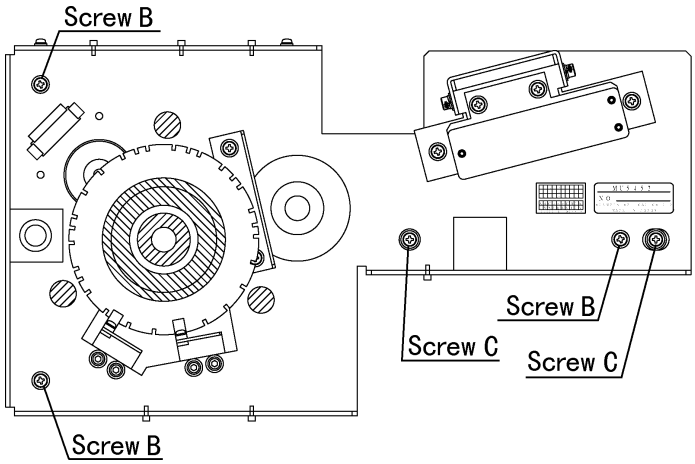


Fig.3

■ ISE Position

● Standard

Discharge shall be made at a position within a radius of 4 mm from the center of the sample pot. (Refer to Fig. 1.)

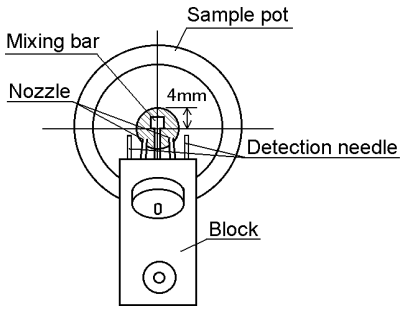


Fig. 1

● Check method

(1) Initialize the FA unit.
(2) Transfer the FA unit to the ISE position.
(3) Lower the FA unit and visually confirm the approximate position.
(4) Perform actual discharging with ISE DIAG and reconfirm.

● Adjustment method

(1) Initialize the FA unit.
(2) Transfer the FA unit to the ISE position.
(3) Lower the FA unit.
(4) Loosen the positioning screws A and the locking screws B and adjust to within the standard. (Refer to Fig. 2.)
(5) Confirm the actual discharge position with ISE DIAG.
(6) Repeat the above operation until the standard is met.

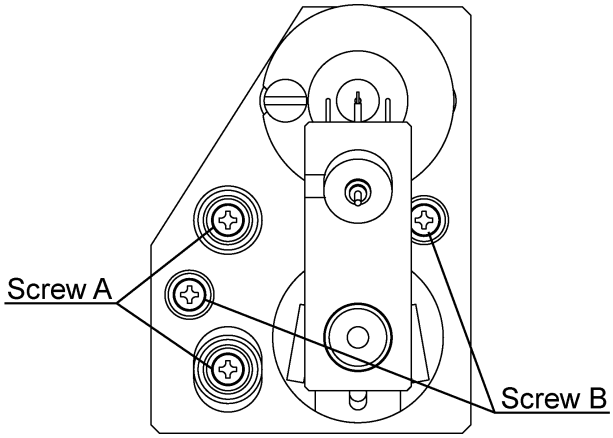


Fig. 2

***** Caution items *****

1. The discharged sample shall not hit the mixing bar.
2. There shall be little splashing of the sample.

■ Dead Volume (Rack)

● Standard

Hitachi cup	50uL
ACA cup	250uL
ϕ 13 test tube	200uL
ϕ 15 test tube	250uL

Note 1) Setting for each rack is possible.
Note 2) It is only possible to meet one standard for one.

● Check method

(1) Enter the standard number of pulses (refer to Table 1) for the used cup in system maintenance.
(2) Remove the sample probe and lower it into the cup.
(3) Insert the probe and confirm that it does not hit the cup bottom.
(4) Fill the dead volume of the cup with water, lower the probe, and confirm that the liquid level is detected.
DS2 SW2 = 4, SW1 = A

● Adjustment method

Adjust with S-probe Limit pulse in Sample Probe of User's Parameters in System Maintenance. (Refer to Fig. 1.)
One pulse effects movement by 0.0555 mm.

Used cup	Standard pulse number
Hitachi cup	1847
ACA cup (glass)	2024
ACA cup (resin)	2010
ϕ13 test tube	2031
ϕ15 test tube	2018

Table 1

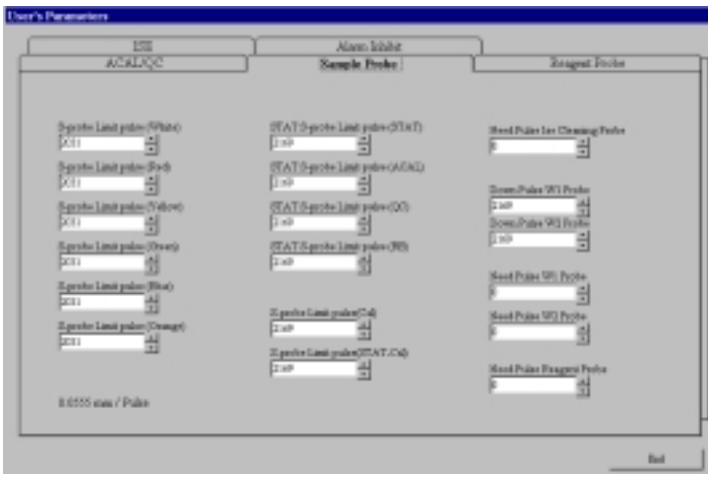


Fig. 1

■ Dead Volume (STAT)

● Standard

Cup for minute quantities	30uL (limited to 25uL aspiration or less)
Hitachi cup	50uL
Conical cup	50uL
ACA cup	250uL
ϕ 13 test tube	200uL
ϕ 15 test tube	250uL

● Check method

(1) Enter the standard pulses for the used cup (refer to Table 1) plus the compensation pulses for the equipment (Note 1) in system maintenance.
(2) Remove the sample probe and lower it into the cup.
(3) Insert the sample probe and confirm that it does not hit the cup bottom.
(4) Fill the dead volume of the cup with water, lower the probe, and confirm that the liquid level is detected.
DS2 SW2 = 4, SW1 = A

Note 1) Only when the used cup is a cup for minute quantities, a Hitachi cup, or a conical cup.

● Adjustment method

Adjust with STAT S-probe Limit pulse in Sample Probe of User's Parameters in System Maintenance.
(Refer to Fig. 1.)
One pulse effects movement by 0.0555 mm.

Used cup	Standard pulse number
Cup for minute quantities	1941
Hitachi cup	1942
Conical cup	1658
ACA cup (glass)	2169
ACA cup (resin)	2155
ϕ13 test tube	2176
ϕ15 test tube	2163

Table 1

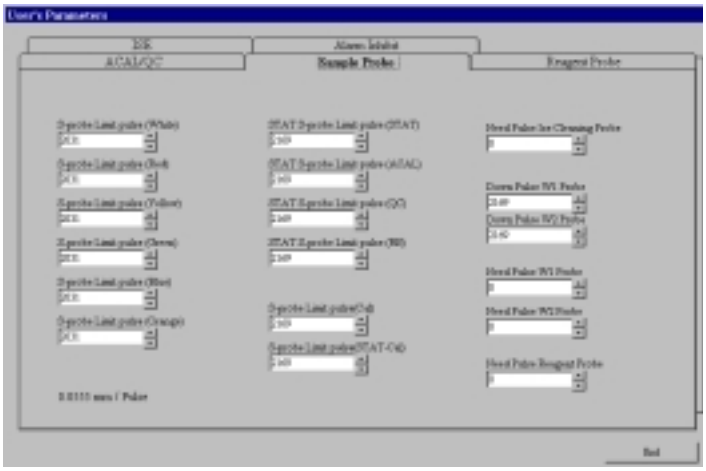


Fig. 1

■ Position of the Cuv Wash Nozzle Upper Position Sensor

Standard

1. At the time of stop at the upper position, the bearing shall have passed the upper dead center. (Refer to Fig. 1.)
2. At the time of stop at the upper position, there shall be a gap between the bearing and the stopper. (Refer to Fig. 1.)

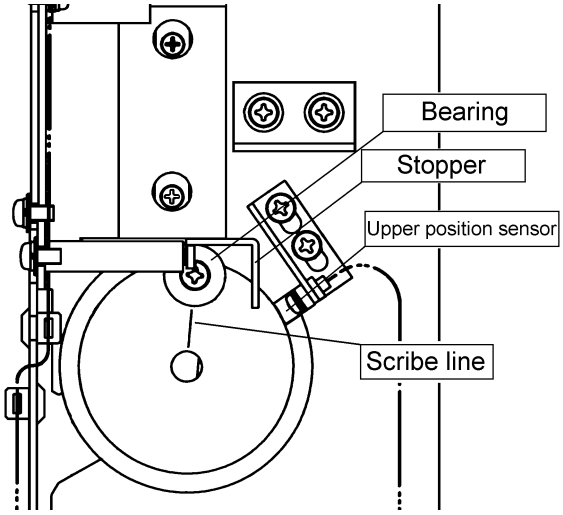


Fig. 1

Check method

(1) Initialize the FB unit.
(2) Visually confirm the bearing position and the gap.

Adjustment method

When the Cuv wash nozzle upper position sensor has been exchanged, the above standard is met by tightening while pushing in arrow direction. (Refer to Fig. 2.)

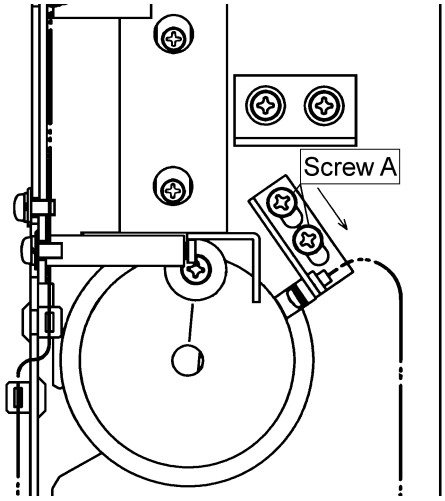


Fig. 2

■ Lower Position

Standard

1. At the lower position, the washing nozzle is at 1 to 3 mm overstroke. (Refer to Fig. 1.)
2. At the lower position, there is a gap between the bearing and the stopper. (Refer to Fig. 2.)

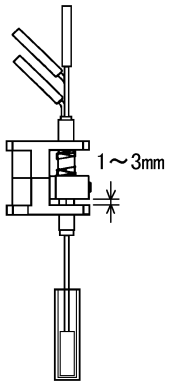


Fig. 1

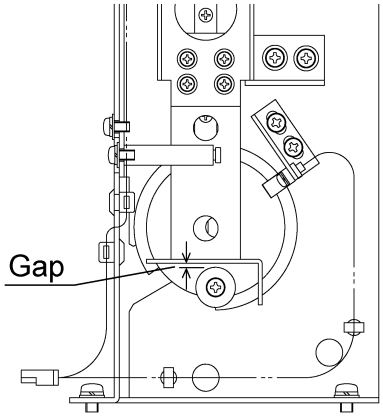


Fig. 2

Check method

(1) Initialize the FB unit and the GA unit.
(2) Lower the FB unit and visually confirm the overstroke amount and the gap.

Adjustment method

Loosen the screws A fixing the lower position stopper or the screws B fixing the washing nozzle mounting plate and adjust to within the standard. (Refer to Fig. 3 and Fig. 4.)

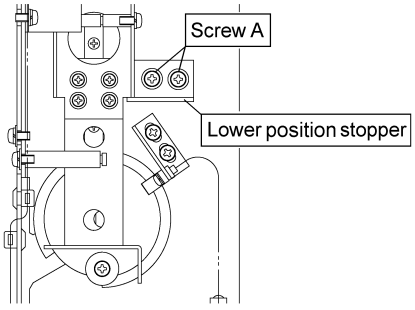


Fig. 3

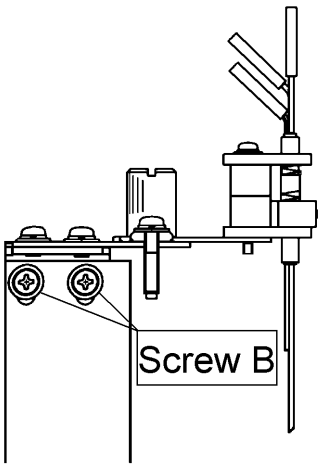


Fig. 4

***** Caution item *****

When screw B is loosened, the perpendicularity of the nozzle and the cuvette position are disturbed and must be reconfirmed.

■ Cuvette Position

Standard

1. Washing nozzle

   At the center of the cuvette position and with a clearance of 0.75 ± 0.5 mm (shorter side) and 1.25 ± 0.5 mm (longer side) respectively from the inner surface of the cuvette. (Refer to Fig. 1.)

2. Aspiration nozzle

   At the center of the cuvette position and with a clearance of 0.75 ± 0.5 mm (shorter side) and 1.25 ± 0.5 mm (longer side) respectively from the inner surface of the cuvette. (Refer to Fig. 1.)

3. Drying nozzle

   At the center of the cuvette position and with a clearance of 0.5 ± 0.2 mm from the inner surface of the cuvette. (Refer to Fig. 2.)

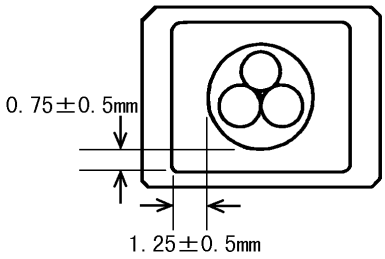


Fig. 1

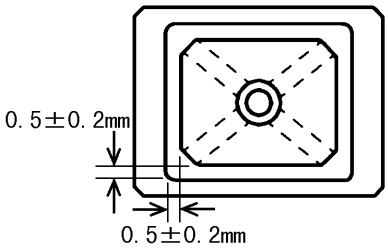


Fig. 2

Check method

(1) Initialize the FB unit and the GA unit.
(2) Lower the FB unit and confirm visually.

Adjustment method

Loosen the screws A fixing the nozzle mounting plate and adjust to within the standard. (Refer to Fig. 3.)

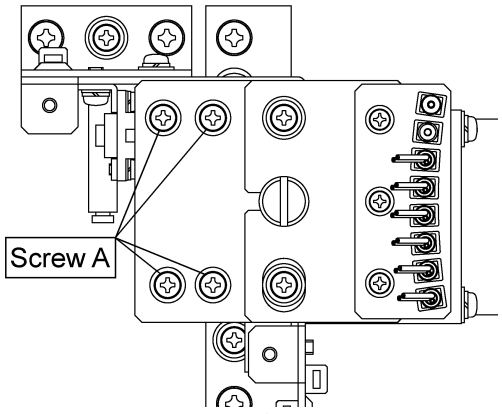


Fig. 3

■ Horizontal Rotation Belt Tension

Standard

When the center of the horizontal rotation belt is pressed with a force of 200 ± 20 gf, the belt shall be deflected by 1.2 mm. (Refer to Fig. 1.)

Check method

Apply pressure to the center of the horizontal rotation belt with a tension gauge and measure the deflection with a scale.

Adjustment method

Loosen the screws A fixing the rotation motor of the FC unit, and move the rotation motor in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

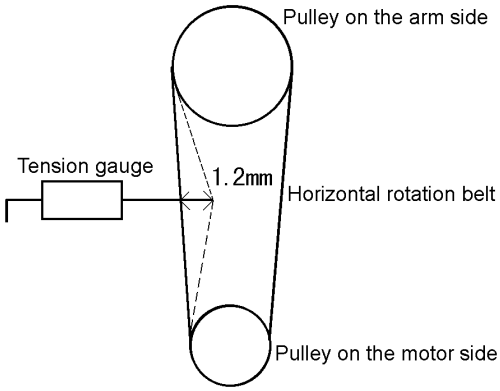


Fig. 1

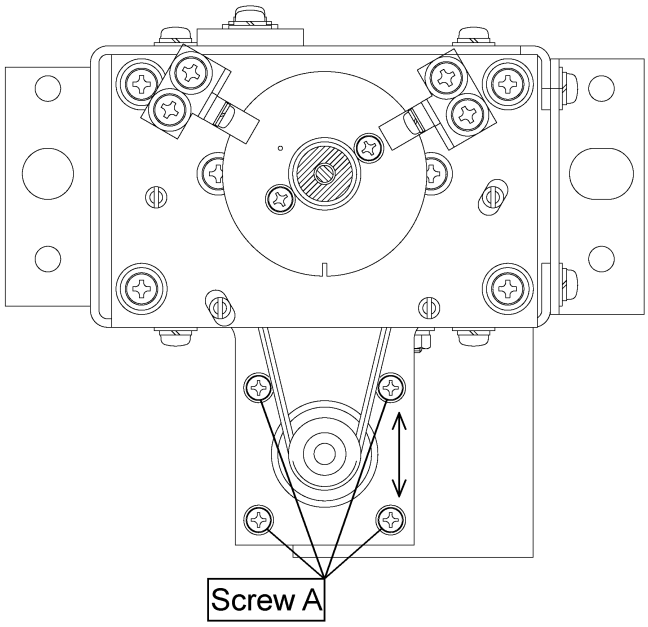


Fig. 2

■ Up/down Belt Tension

Standard

When the center of the up/down belt is pressed with a force of 300 to 400 gf, the belt shall be deflected by 1.3 mm. (Refer to Fig. 1.)

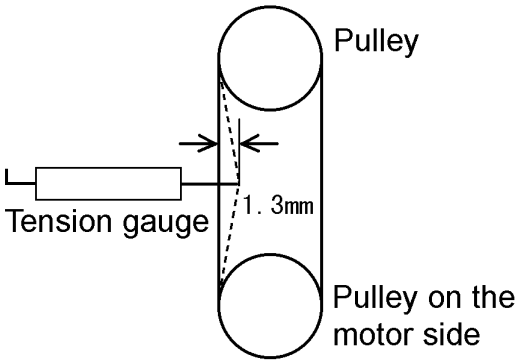


Fig. 1

Check method

Apply pressure to the center of the vertical movement belt with a tension gauge and measure the deflection with a scale.

Adjustment method

Loosen the screws A fixing the up/down motor of the FC unit, and move the up/down motor in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

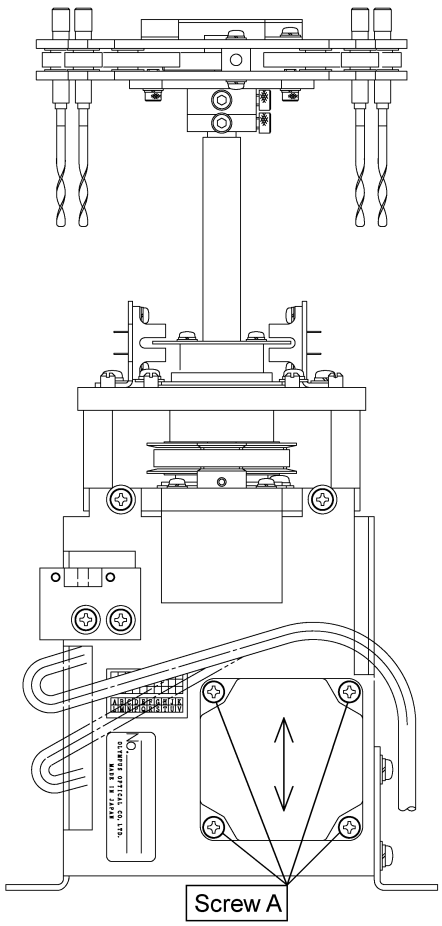


Fig. 2

■ Upper Position Sensor

Standard

1. After initialization, the sensor shall change from ON to OFF with more than 5 pulses feed in downward direction.
2. After initialization, descent shall be made to the lower point position. At this time, the gap between the bearing and the guide B shall be 0.5 to 1.0 mm. (Refer to Fig. 1.)

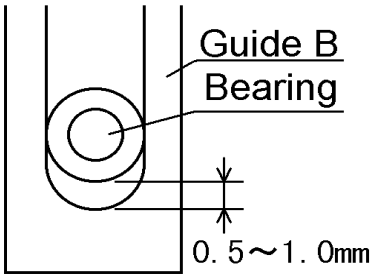


Fig. 1

Check method

(1) Initialize the FC unit.
(2) Execute pulse feed in downward direction.
(3) Count the number of pulses until the sensor changes from ON to OFF.
FC01:DS1 SW2 = 5, SW1 = 7
FC11:DS1 SW2 = 4, SW1 = 8
(4) Initialize the FC unit again.
(5) Perform descent to the lower point position.
(6) Confirm the gap between the bearing and the guide B visually.

Adjustment method

Loosen the screws A fixing the upper position sensor and move the plate to which the sensor is fixed in arrow direction to bring the gap to within the standard. (Refer to Fig. 2.)

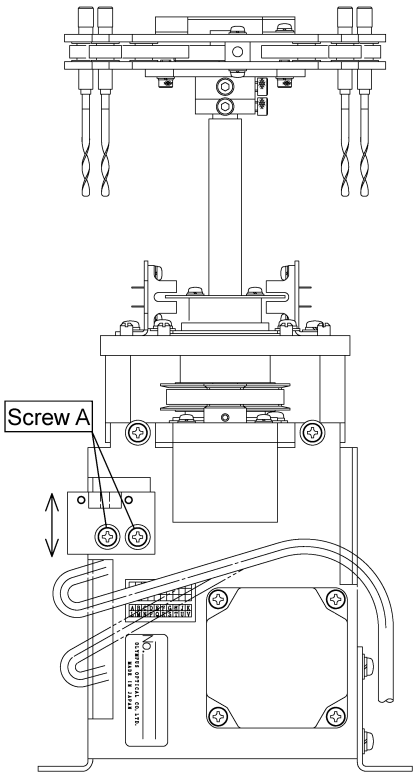


Fig. 2

■ Rotation Origin Sensor

Standard

After initialization, the sensor shall change from ON to OFF with pulse feed by 9 ± 2 pulses in CCW direction.

Check method

(1) Initialize the FC unit.
(2) Perform pulse feed in CCW direction.
(3) Count the number of pulses until the sensor changes from ON to OFF.
FC01:DS5 SW2 = 5, SW1 = 7
FC11:DS5 SW2 = 4, SW1 = 8

The above is a check item because of fixed pulses forward initialize.

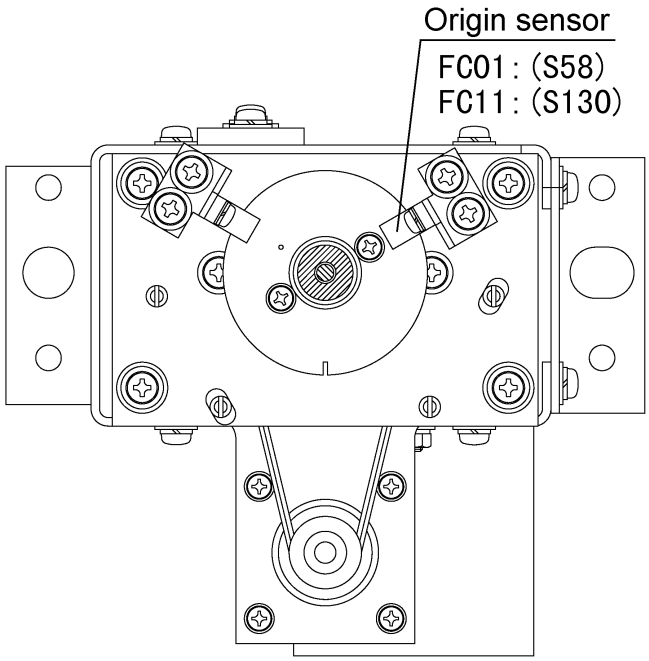


Fig. 1

■ Rotation Stop Position Sensor

Standard

At each stop position, the sensor shall become ON for at least 8 pulses with pulse feed in CW or CCW direction.

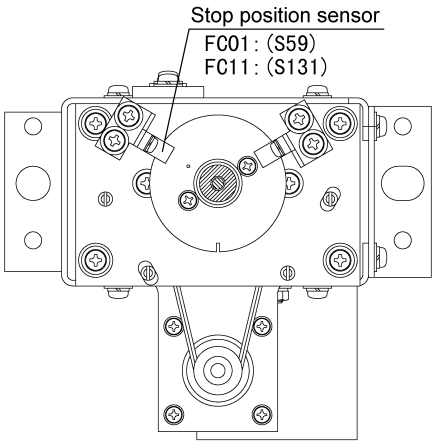


Fig. 1

Check method

(1) Initialize the FC unit.
(2) Perform pulse feed for the FC unit in CW or CCW direction.
(3) Confirm that the sensor becomes ON for at least 5 pulses.

FC01:DS6 SW2 = 5, SW1 = 7
FC11:DS6 SW2 = 4, SW1 = 8

Adjustment method

Loosen the screws A fixing the stop position sensor, and adjust by moving the sensor in arrow direction so that the number of pulses is within the standard. (Refer to Fig. 2.)

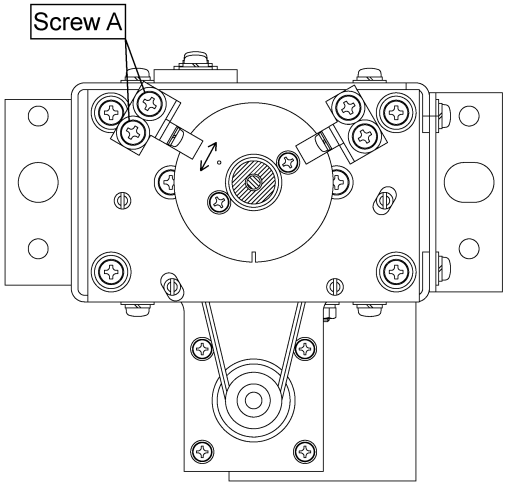
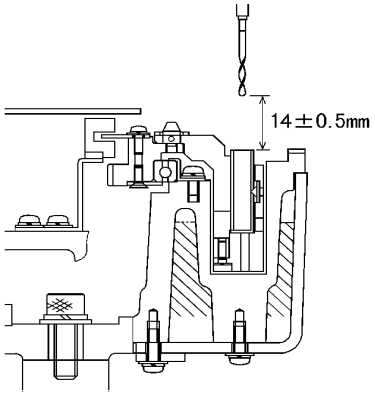


Fig. 2

■ Height Above the Cuvette

Standard

After initialization, the distance from the upper edge of the cuvette to the tip of the mixing bar shall be 14 ± 0.5 mm. (Refer to Fig. 1.)



Check method

(1) Initialize the FC unit.
(2) Confirm the height above the upper edge of the cuvette with a scale.

Adjustment method

Loosen the screws A and B and adjust to within the standard. (Refer to Fig. 2

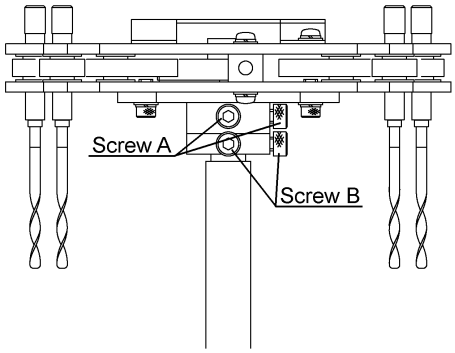


Fig. 2

***** Caution item *****

1. When the screws A are loosened, the horizontal rotation stop positions are disturbed and must be confirmed again.
2. The block fixed by the screws A and the block fixed by the screw B must be fixed in contact with each other.

■ Cuvette Position

Standard

At the center of the cuvette, there shall be a clearance of 0.5 mm (shorter side) and 1.0 mm (longer side) respectively from the inner surface of the cuvette. (Refer to Fig. 1)

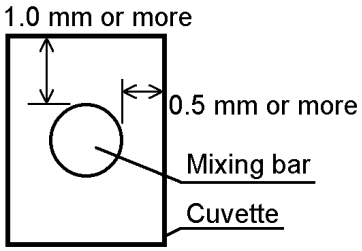


Fig. 1

Check method

(1) Remove the mixing bar.
(2) Initialize the FC unit and move it down.
(3) Install the mixing bar and confirm visually.

FC01:Cuv No. 67, 69
FC11:Cuv No. 133

Adjustment method

(1) Loosen the screws A fixing the M-base and adjust the rotation direction. (Refer to Fig. 2.)
(2) When adjustment according to the above method is not sufficient, loosen the screws B fixing the FC unit and the positioning screws C and adjust to within the standard. (Refer to Fig. 3.)

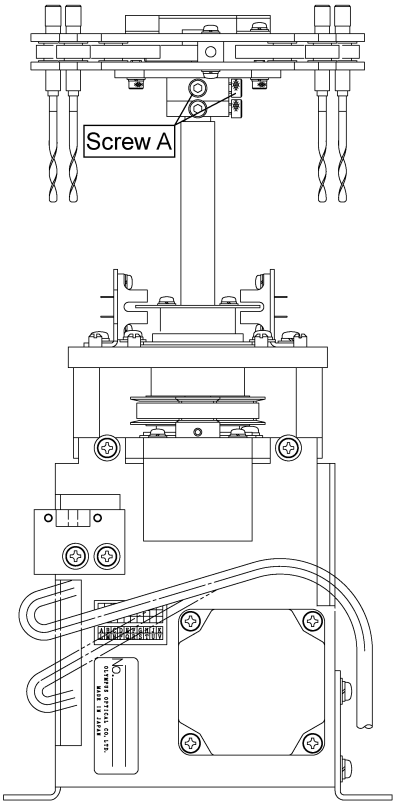


Fig. 2

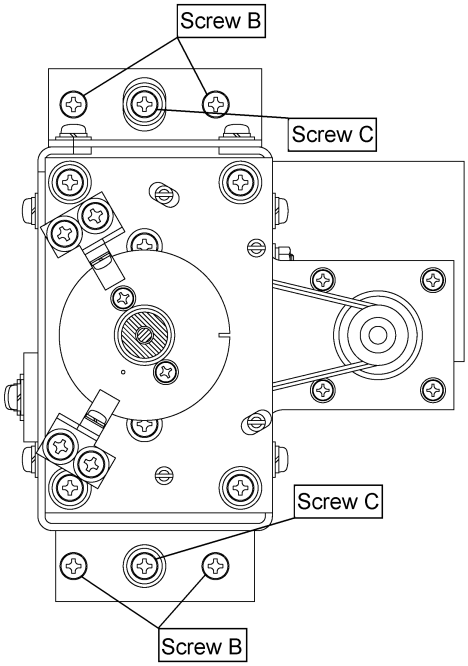


Fig. 3

■ Wash Tank Position

Standard

At the center of the wash tank, the clearance from the inner surface of the wash tank shall be 1.0 ± 0.5 mm. (Refer to Fig. 1.)

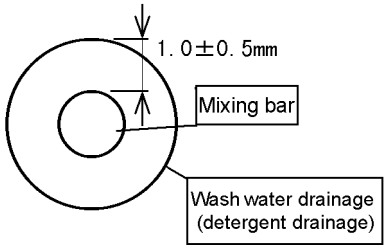


Fig. 1

Check method

(1) Remove the mixing bar.
(2) Initialize the FC unit.
(3) Move the FC unit down.
(4) Install the mixing bar and confirm visually.

Adjustment method

Loosen the screws A fixing the wash tanks and adjust each wash tank so that it is within the standard. (Refer to Fig. 2.)

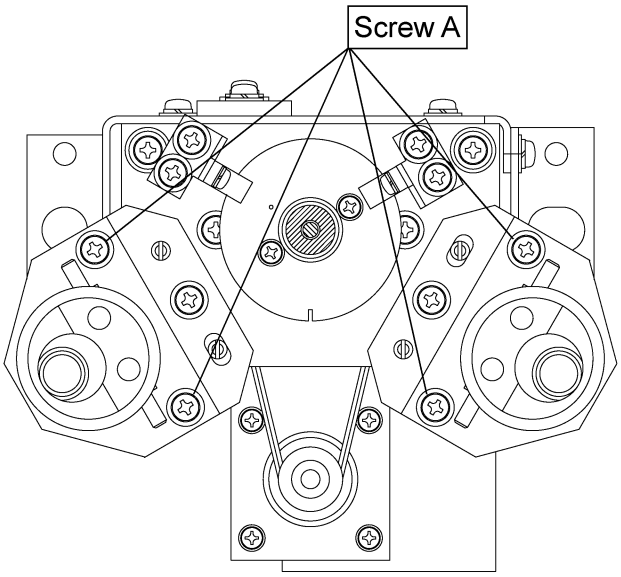


Fig. 2

■ Horizontal Rotation Belt Tension

● Standard

When the center of the horizontal rotation belt is pressed at the center with a force of 200 ± 20 gf, the belt deflection shall be 1 mm. (Refer to Fig. 1.)

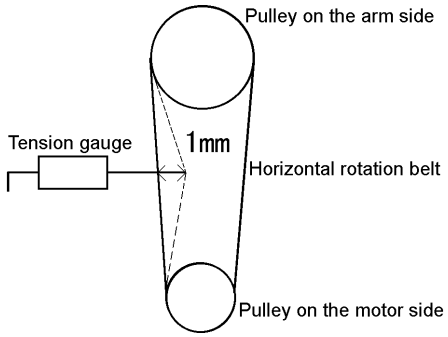


Fig. 1

● Check method

Apply pressure to the center of the belt with a tension gauge and measure the deflection with a scale.

● Adjustment method

Loosen the screws A fixing the probe rotation motor of the FD unit and move the motor in arrow direction to bring it to within the standard. (Refer to Fig. 2.)

● Caution

Don’t make too much tension even play of arm in rotation looks too much.
If you make too much tension, it is effective to dispensing accuracy.
We recommend to exchange whole FA unit at customer site. This adjustment should be done in factory.

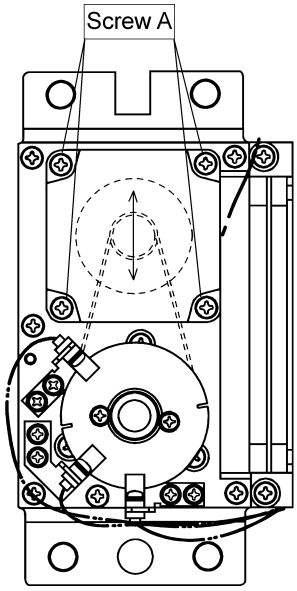


Fig. 2

■ Upper Position Sensor

● Standard

1. After initialization, the sensor shall change from ON to OFF with pulse feed in downward direction by 24 ± 3 pulses.
2. When pulse feed in upward direction is performed directly after the sensor has changed from ON to OFF with pulse feed in downward direction, the sensor shall change from OFF to ON within 6 pulses.

● Check method

(1) Initialize the FD unit.
(2) Perform pulse feed in downward direction.
(3) Count the number of pulses until the sensor becomes OFF.
FC01:DS1 SW2 = 4, SW1 = 7
FC11:DS1 SW2 = 5, SW1 = 9
(4) Initialize the FD unit again.
(5) Perform pulse feed in downward direction until the sensor changes from ON to OFF.
(6) When the sensor has become OFF, perform pulse feed in upward direction and count the number of pulses until the sensor becomes ON.

The above is a check item because of fixed pulses forward initialize.

■ Rotation Origin Sensor

● Standard

After initialization, the sensor shall change from ON to OFF when the probe is transferred to the origin position (cuvette position) and pulse feed is performed by 10 ± 3 pulses in CW direction for FD01 and in CCW direction for FD11.

FD01:DS5 SW2 = 4, SW1 = 7
FD11:DS5 SW2 = 5, SW1 = 9

● Check method

(1) Initialize the FD unit.
(2) Transfer the probe to the origin position (cuvette position).
(3) Perform pulse feed in CW direction for FD01 and in CCW direction for FD11.
(4) Count the number of pulses until the sensor changes from ON to OFF.

The above is a check item because of fixed pulses forward initialize.

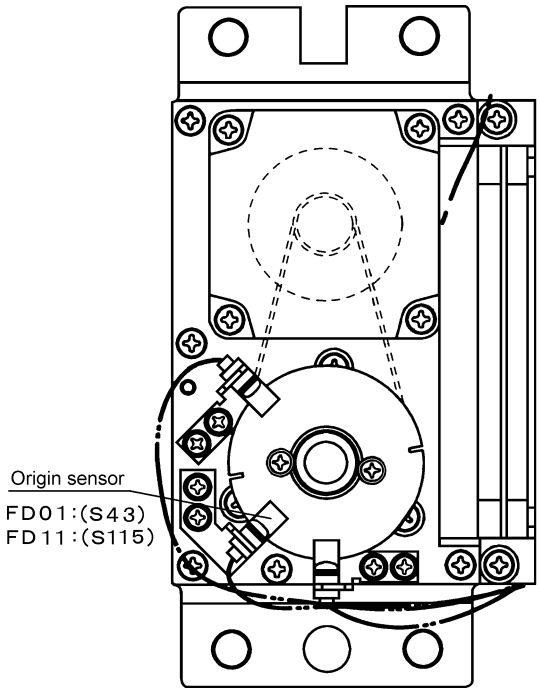


Fig.1

■ Rotation Stop Position Sensor

● Standard

After initialization, the sensor shall become ON for at least 6 pulses with pulse feed in CW or CCW direction to each stop position.

● Check method

(1) Initialize the FD unit.
(2) Perform pulse feed for the probe to each stop position.
(3) Perform pulse feed for the probe in CW or CCW direction.
(4) Confirm that the sensor becomes ON for at least 6 pulses.
Wash position sensor
FD01:DS6 SW2 = 4, SW1 = 7
FD11:DS6 SW2 = 5, SW1 = 9
Reagent position sensor
FD01:DS4 SW2 = 4, SW1 = 7
FD11:DS4 SW2 = 5, SW1 = 9

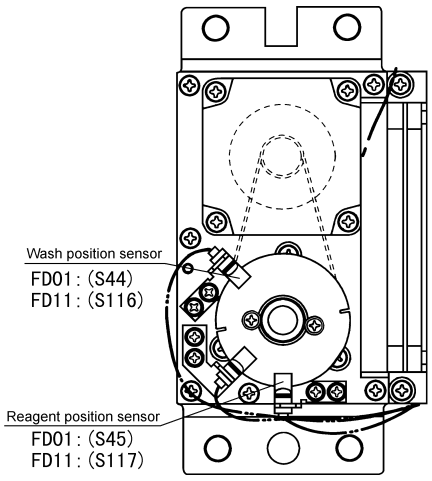


Fig. 1

● Adjustment method

Adjust by loosening the screws A for the wash position sensor and the screws B for the reagent position sensor and moving the sensor in arrow direction. (Refer to Fig. 2.)

	Origin position sensor FD01:S43 FD11:S115	Wash position sensor FD01:S44 FD11:S116	Reagent position sensor FD01:S45 FD11:S117
Cuvette position	●	❍	❍
Wash position	❍	●	❍
Reagent aspiration position	❍	❍	●

● : Detection ❍ : No detection

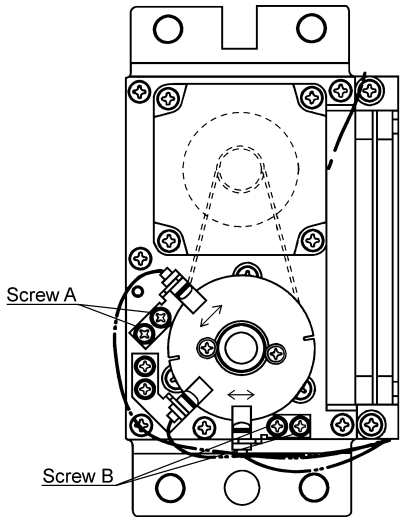


Fig. 2

■ Horizontal Rotation Stopper Position

● Standard

With stop at the origin position, the gap between the stopper and the stopper pin shall be 0.4 ± 0.1 mm. The origin sensor is ON even when the stopper is in contact with the stopper pin. (Refer to Fig. 1.)

● Check method

(1) Initialize the FD unit.
(2) Transfer the FD unit to the origin position.
(3) Visually confirm the gap between the stopper and the stopper pin.
(4) Cut the energization of the FD unit.
(5) Bring the arm manually into contact with the stopper and confirm the sensor.
FD01:DS5 SW2 = 4, SW1 = 7
FD11:DS5 SW2 = 5, SW1 = 9

● Adjustment method

(1) Initialize the FD unit.
(2) Transfer the FD unit to the origin position.
(3) Loosen the screws A and adjust so that the gap is within the standard. (Refer to Fig. 2.)

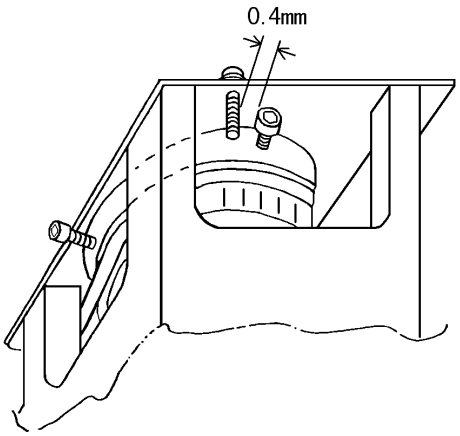


Fig. 1

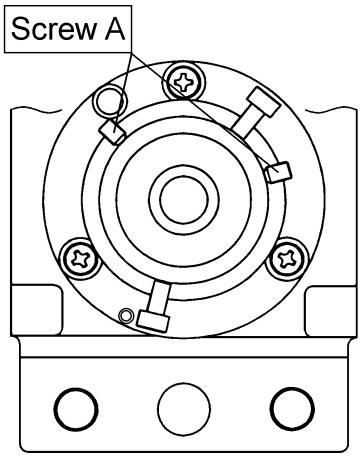
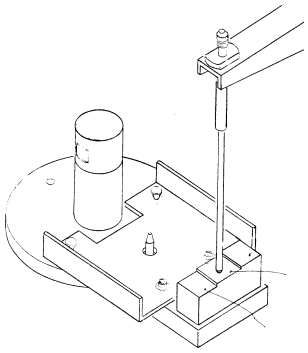


Fig. 2

■ Height of Probe Arm

● Standard

Jig Probe is in the middle of low/ high limit of Jig block.
(Refer to Fig. 1.) FD Target of height is 3mm from R Tray Base.
(Jig for field)
(KCM0806) JC03-M520-AA01-MD7147 --- Common with AU2700
Jig probe 150mm (Real probe 190mm)
Jig block height Upper limit 11.15 +0/-0.05mm,
Middle 10.95 +/-0.05mm, Lower limit 10.75 +0.05/-0mm



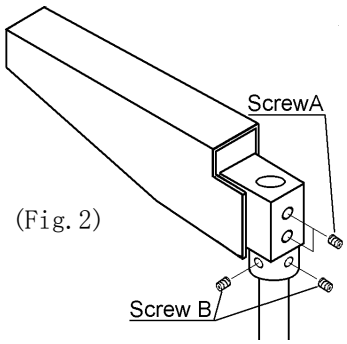
(Fig. 1)

● Check method

(1) Initialize the FD unit.
(2) Transfer the probe to the Reagent lower (Reagent aspiration) position..
(3) Check by Jig. Jig Probe is in the middle of low/ high limit of Jig block.

● Adjustment method

(1) Initialize the FD unit.
(2) Loosen the screws A and B and adjust by moving in vertical direction. (Refer to Fig. 2.)



(Fig. 2)

***** Caution item *****

1. Fix the block fixed by the screws A and the block fixed by the screws B in contact with each other.
2. When the height above the cuvette is adjusted, the stop positions for the horizontal rotation are disturbed and each stop position must be reconfirmed.
3. (Note) The distance from the upper edge of the cuvette to the tip of the probe shall be 14.5 ± 0.5 mm in design. (Refer to Fig. 3)
The height of probe in cuvette shall be about 3 mm from mixture surface.
(The height in cuvette is changeable by mixture volume)

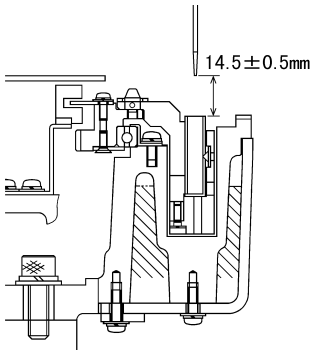


Fig. 3

■ Cuvette Position

● Standard

The probe shall be at the center of the cuvette, and the clearance from the cuvette shall be 0.5 mm or more. (Refer to Fig. 1.)

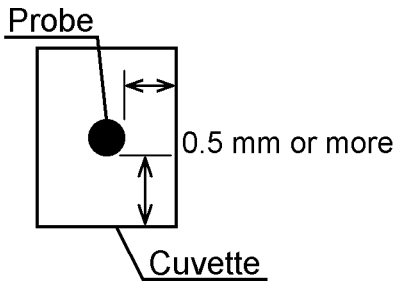


Fig. 1

● Check method

(1) Remove the R-probe.
(2) Initialize the FD unit and transfer it to the cuvette position.
(3) Lower the unit, attach the R-probe, and confirm.
FD01:Cuv No. 31
FD11:Cuv No. 57

● Adjustment method

(1) Initialize the FD unit.
(2) Transfer the unit to the cuvette position and lower it.
(3) Loosen the screws A and adjust by moving in arrow direction, so that the standard is met. (Refer to Fig. 2.)

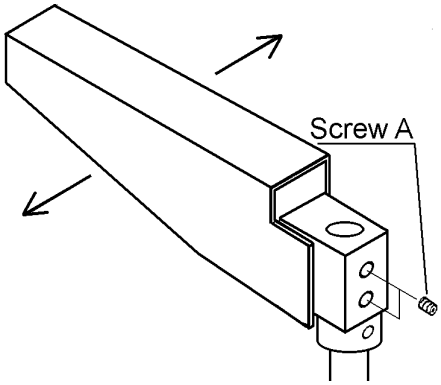


Fig. 2

***** Caution items *****

Take care that the probe does not hit the cuvette.

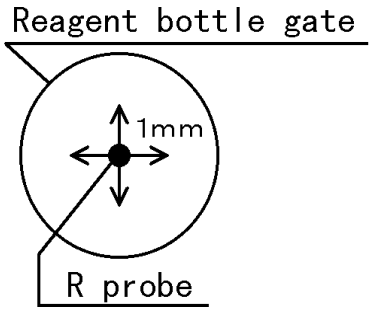
Just confirm this point, normally. Use jig probe and jig cuv if you need fine adjustment.

Because probe on instrument might be not straight.

■ Reagent Aspiration Position

● Standard

The probe is in the center of the Reagent bottle gate and the distance from the center must be within 1.0mm. (Refer to Fig.1)



● Check method

(1) Remove the lid of the DA unit , and put a magnet on the cover open sensor.
(2) Initialize the FD unit and the DA unit.
(3) Set a reagent bottle to the reagent tray.
(4) Move FD unit to the Reagent aspiration position.
(5) Check the reagent aspiration position visually, by downward of probe

● Adjustment method

Adjust the dislocation of reagent tray for rotation direction by loosing screw A.(Refer to Fig.2.)
Adjust the other dislocations by loosing screw B and C which are fixing FD unit. (Refer to Fig.3.)
(Screw C is the positioning screw of DA unit.)

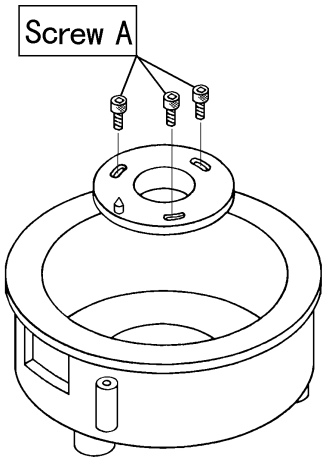


Fig.2

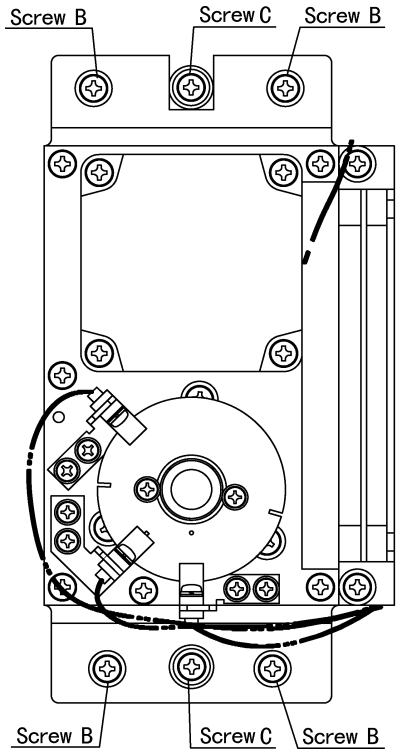


Fig.3

***** Caution items *****

1. Re-check the pre-dilution position (origin position) after moving FD unit.
2. Do not clash the probe with cuvettes, etc.

■ Wash Tank Position

● Standard

The probe shall be at the center of the wash tank, and the deviation from the center shall be within 0.5 mm. (Refer to Fig. 1.)

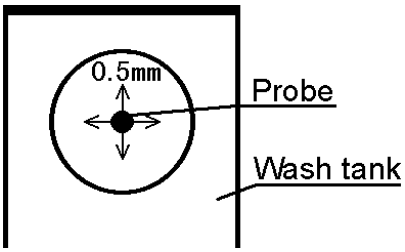


Fig. 1

● Check method

(1) Remove the R-probe.
(2) Initialize the FD unit.
(3) Lower the unit to the wash tank position.
(4) Attach the probe and confirm visually.

● Adjustment method

(1) Remove the R-probe.
(2) Initialize the FD unit.
(3) Lower the unit to the wash tank position.
(4) Attach the probe.
(5) Loosen the screws A fixing the wash tank and adjust so that the standard is met. (Refer to Fig. 2.)

***** Caution item *****

When the wash tank is moved, take care not to hit the probe.

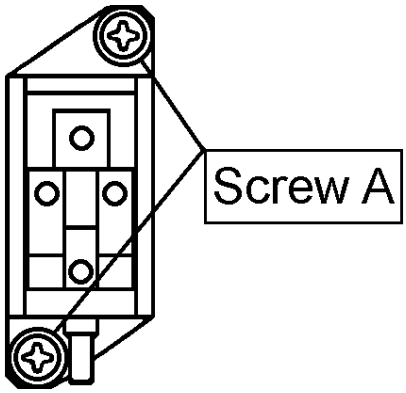


Fig. 2

■ Reagent Dead Volume

When the probe is lowered onto the reagent tray , the distance between the probe tip and the tray bottom shall be 3 +/-0.5 mm.

*** Information ***

With the above standard , the following shall be satisfied

60mL bottle : 1mL
30mL bottle : 1mL
15mL bottle : 350uL

● Check method

(1) Remove the lid of the DA unit , and put a magnet on the cover open sensor.
(2) Initialize the FD unit and DA unit.
(3) Move the FD unit to the reagent aspiration position and lower it.
(4) Measure the distance from the reagent tray bottom to the probe tip with a scale.

● Adjustment method

Adjust with Down Pulse Reagent Probe in Reagent Probe of User's Parameters in System Maintenance. (Refer to Fig. 1.)
One pulse effects movement by 0.0555 mm.

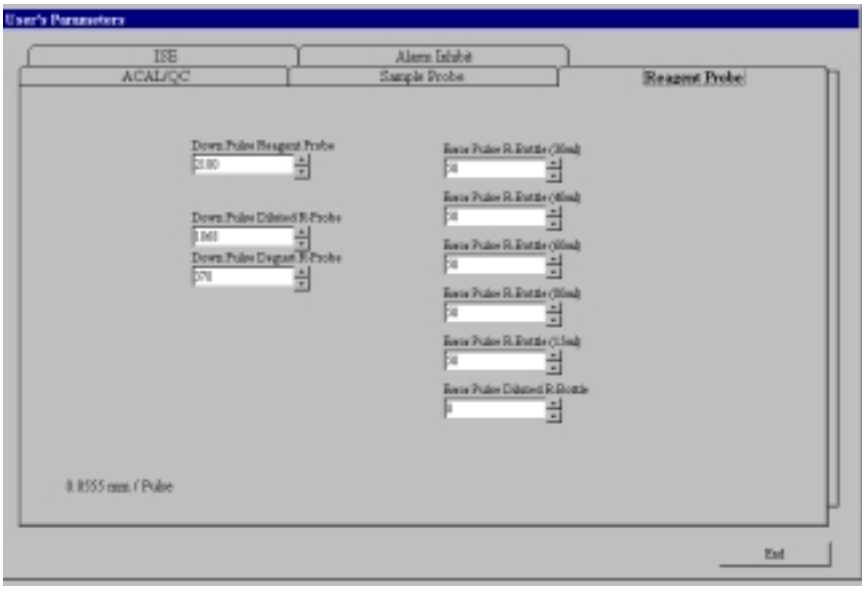


Fig.1

■ GA Gear Backlash

Standard

The gears shall be fixed in light contact with each other. When the energization is cut and the gears are turned by hand, they shall turn without special resistance.

*** Information ***
The backlash between gears shall be about 0.05 mm.

Check method

Use DIAG to cut the GA energization and confirm by turning the GA unit manually.

Adjustment method

(1) For adjustment of the backlash between the intermediate gear and the motor gear, loosen the screws A and adjust so that the standard is met. (Refer to Fig. 1.)
(2) For adjustment of the backlash between the internal gear and the intermediate gear, loosen the screws B and adjust so that the standard is met. (Refer to Fig. 1.)

***** Caution item *****

When the backlash is too large, the photometry data will be abnormal.

After backlash adjustment, always perform a water test or similar and confirm the photometry system.

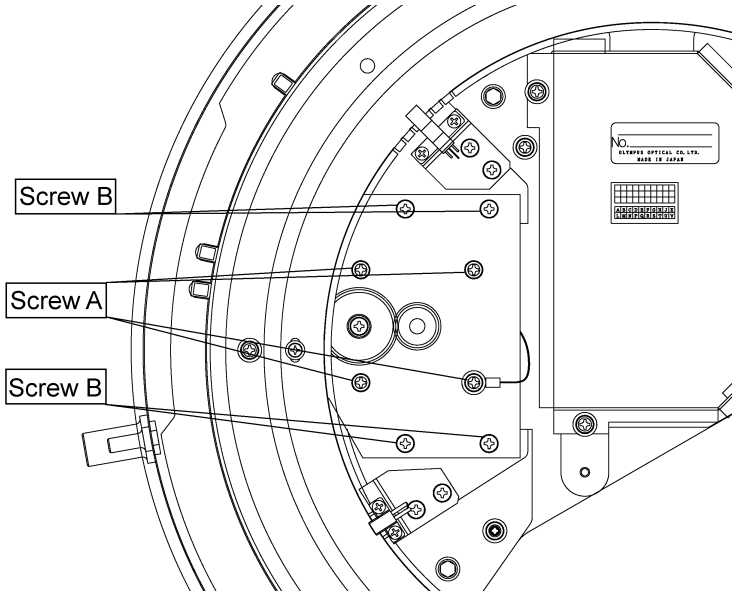


Fig. 1

■ GA Origin Sensor Position

Standard

1. At the origin stop position and at the about 90° rotated positions, the positioning jig (KCM0314) shall enter smoothly into the cuvette wheel (the cuvettes shall be removed). (Refer to Fig. 1.)
2. When pulse feed is performed from the origin stop position in CW direction, the sensor shall change from ON to OFF after 15 ± 5 pulses.

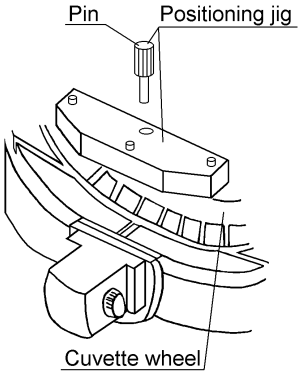


Fig. 1

Used jig

Positioning jig (KCM0314)

Check method

(1) Set the cuvette wheel after removing the cuvettes 34, 72, 110, and 148 from it.
(2) Initialize the GA unit.
(3) Insert the pin of the positioning jig into the cuvette wheel and confirm that it enters smoothly.
(4) Pull the pin, rotate by 38 cuvettes in CCW direction, and insert the pin to confirm smooth entry. (Four positions to be confirmed.)
(5) Initialize the GA unit again.
(6) Perform pulse feed in CW direction and confirm the sensor concealment amount.
DS1 SW2 = 4, SW1 = 3

Adjustment method

Loosen the screws A fixing the origin sensor and move the sensor in arrow direction to adjust so that the standard is met. (Refer to Fig. 2.)

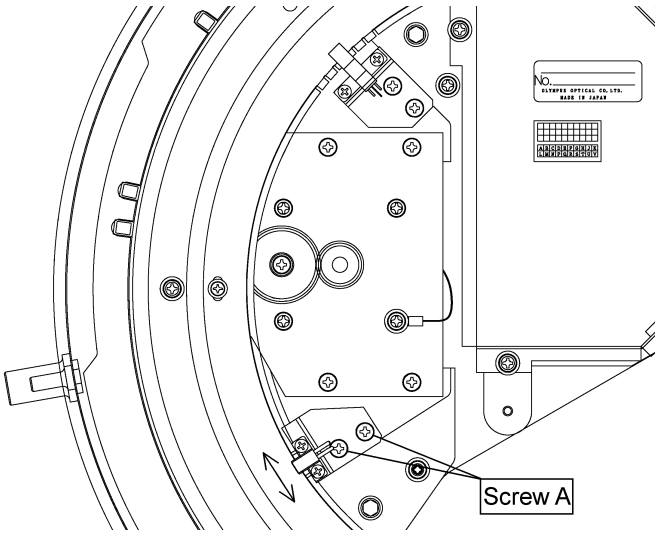


Fig. 2

■ GA Stop Position Sensor Position

Standard

With pulse feed to each stop position in CW and CCW direction after initialization, the difference in the number of pulses in CW and CCW direction shall be within ± 3 pulses.

Check method

(1) Sequentially initialize the units FA, FB, FC, FD, and GA.
(2) Perform pulse feed in CW and CCW direction and count the number of pulses.
DS2 SW2 = 4, SW1 = 3

Adjustment method

Loosen the screws A fixing the stop position sensor and adjust by moving the sensor in arrow direction so that the standard is met. (Refer to Fig. 1.)

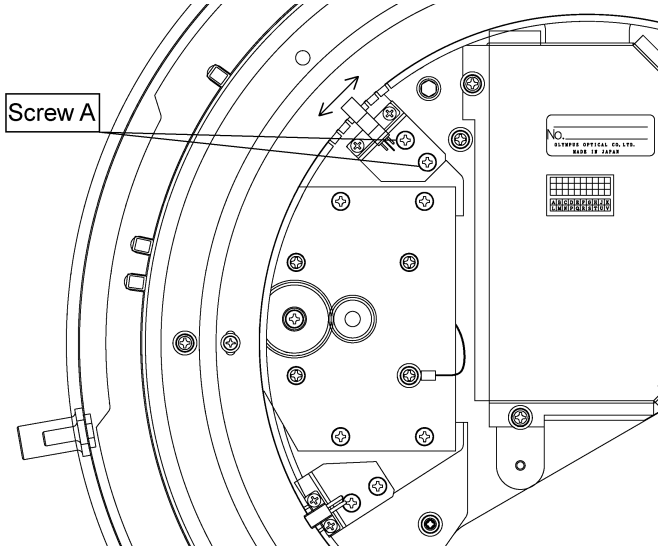


Fig. 1

■ Height of the ISE Mixing Bar

Standard

The height from the mounting base of the mixing unit to the tip of the mixing bar shall be 35 ± 1 mm. (Refer to Fig. 1.)

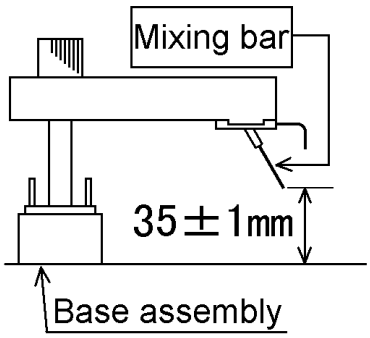


Fig. 1

Check method

(1) Remove the sample pot.
(2) Confirm the distance from the base to the tip of the mixing bar with a scale.

Adjustment method

(1) Loosen the screw A and move in arrow direction to adjust to within the standard. (Refer to Fig. 2.)

***** Caution item *****

When the screw A is loosened, the position of the mixing bar is disturbed and must be adjusted again.

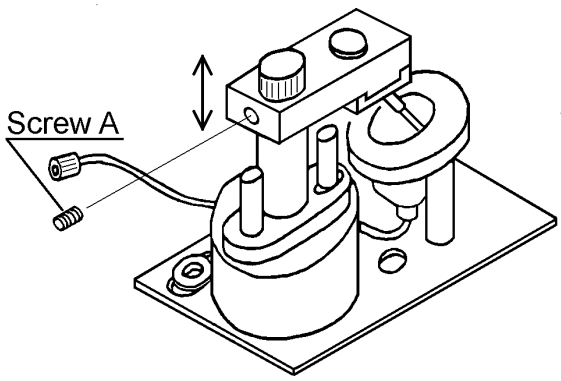


Fig. 2

■ ISE Mixing Bar Position

Standard

The root of the mixing bar shall be at the center of the sample pot. (Refer to Fig. 1.)

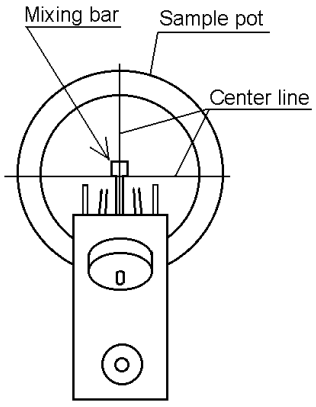


Fig. 1

Check method

Confirm visually from the upper part of the sample pot.

Adjustment method

1. Loosen the screws A fixing the mixing unit on the base and adjust to within the standard. (Refer to Fig. 2.)
2. In case of a large deviation in the arrow direction of Fig. 3, loosen the screws B and adjust by movement in arrow direction. (Refer to Fig. 4.)

***** Caution item *****

When the screw B is loosened, the height of the mixing bar is disturbed and must be adjusted again.

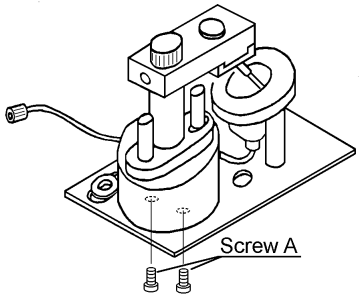


Fig. 2

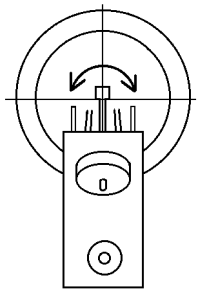


Fig. 3

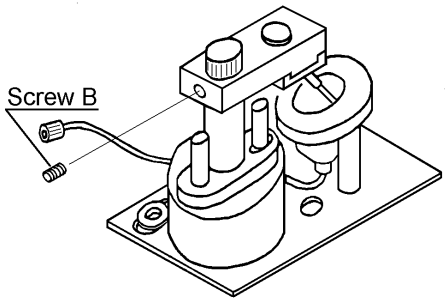


Fig. 4

■ ISE Nozzle Position

Standard

Discharge shall be made within a radius of 4 mm from the center of the sample pot. (Refer to Fig. 1.)
There shall be little splashing of the liquid.

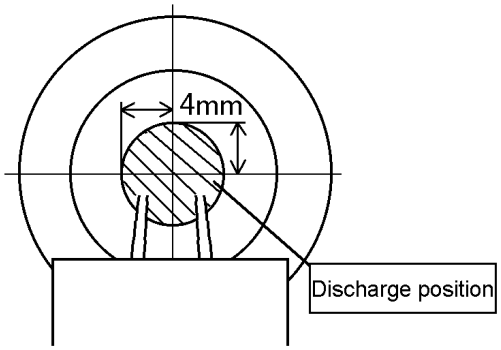


Fig. 1

Check method

Perform actual discharge with ISE priming and confirm visually.

Adjustment method

(1) Remove the mixing unit.
(2) Loosen the screw A fixing the nozzle holder and turn the nozzle to adjust it to within the standard. (Refer to Fig. 2.)

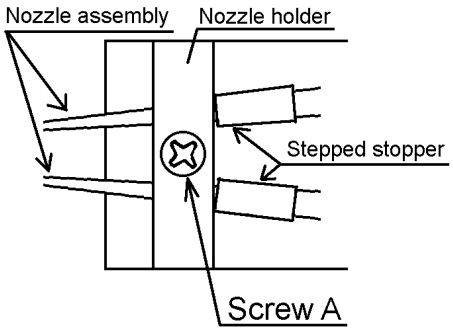


Fig. 2

■ Check method for probe clot detection

- Standard

  Occurrence rate of clot in sample aspiration for each concentration of DEA solution.

Sample volume	Water	60%DEA	90%DEA
2µL	0%	0%	50%<
16µL	0%	0%	100%
50µL	0%	0%	100%

- Confirmation

  1.Set items with 3 kinds of sample volume(2,16,50).
  2.Set 10 samples each for water, 60%DEA, and 90%DEA.
  3.Perform analysis.
  4.Make sure of percentage of clot occurrence and compare with standard.

- Adjustment

  No adjustment is possible as mechanical and as electrical. If out of standard, check sensor, PCB, cable, and piping.
  Viscosity of DEA is changed with temperature. So, DEA must be kept in room temperature before using.
  In case out of standard, use another DEA because the DEA concentration may not be correct.

(Reference)

- How to make DEA solution

  DEA should be prepared with weight %.
  Name of DEA 2,2'-Iminodiethanol (Diethanolamine: DEA)

  (60%DEA) 60g DEA + Water -> 100mL
  Mix 60g DEA and appr.35mL water in a 100mL measuring flask.
  Fill in water until 100mL and mix 10min more.
  (90%DEA) 90g DEA + Water -> 100mL
  Mix 90g DEA and appr.5mL water in a 100mL measuring flask.
  Fill in water until 100mL and mix 10min more.

- Compare table of Viscosity

  Unit of Viscosity is "CP".(1CP = 1 mPaS)

	CP		CP
Water	1	DEA 60%	10.92
Reagent	1.1	DEA 70%	22.80
Serum	1.5 - 1.9	DEA 80%	55.20
Concentrated Reagent	2.3 – 4.0	DEA 90%	112.80
DEA 40%	6	DEA 100%	228.00

■ Installation Conditions

Installation Conditions

- A place not exposed to direct sunlight
- A place with little dust
- A flat place with little inclination (max. slope: 1/200)
- A place with few vibrations
- A place with sufficient floor strength in regard to the equipment weight (about 480 kg)
- A place with an elevation of 2000 m or less

Power supply and noise conditions

- A place with a switchboard within 10 m of this equipment
- A place without severe voltage fluctuations (voltage fluctuations within ± 10%)
- A place with no machines producing abnormal noise in the vicinity
- A place with no corrosive gas

Temperature and humidity conditions

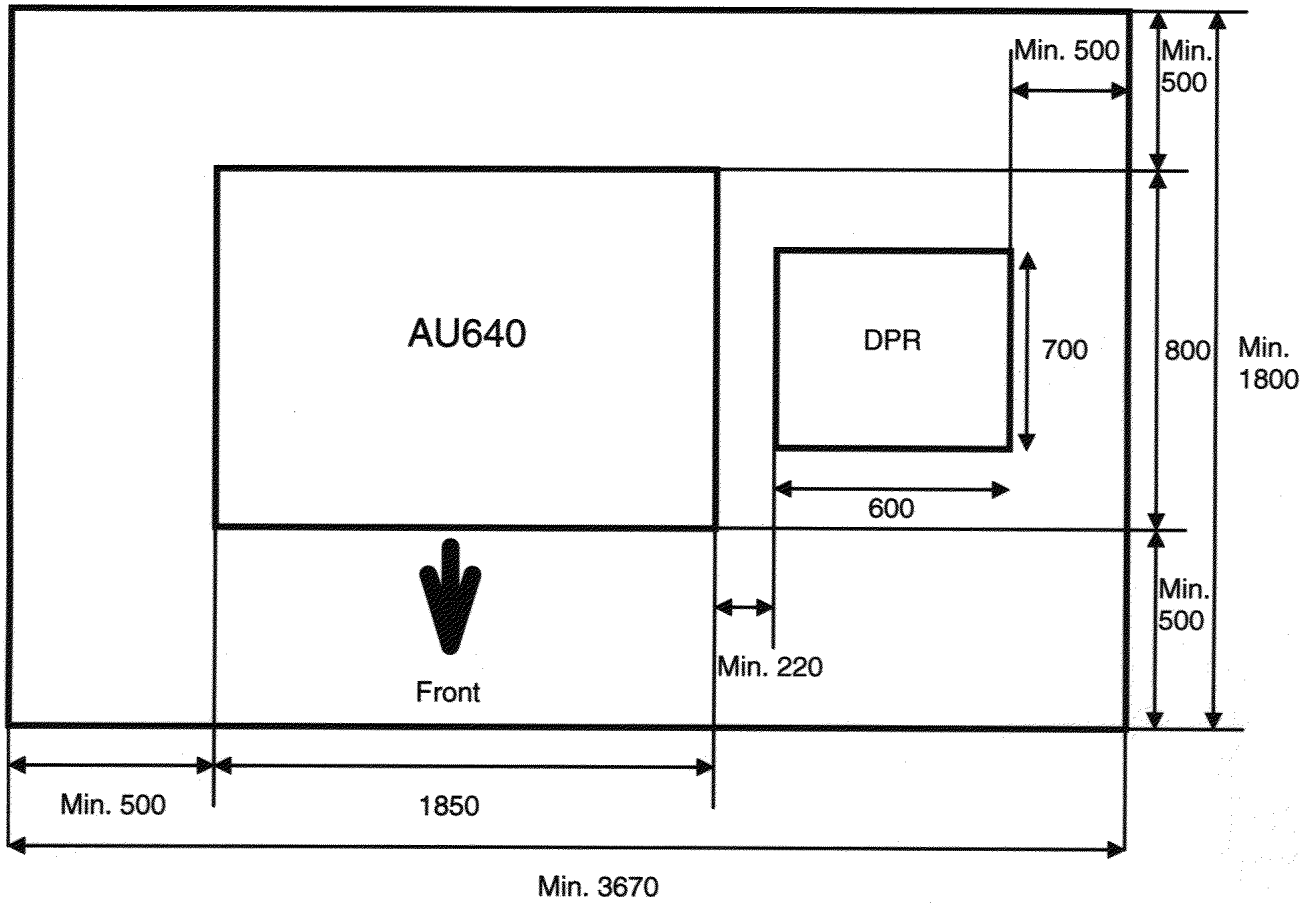
- The temperature during use shall be from 18 to 32°C, and the fluctuations during measuring shall be within ± 2°C (equipment heat output: About 10080000 J/h)
- The humidity during use shall be from 40 to 80% RH, and there shall be no condensation.
- The ambient temperature and humidity for the equipment shall be 5 to 40°C and 15 to 90% RH.

Water supply and drainage conditions

- A water tap shall be within 10 m from the water inlet of the equipment, and there shall be a drainage port (inner diameter: 48 mm or more) at a height of 0.1 m or less.
- The purity of the deionized water shall be so that the conductivity is 2 µS/cm or less (specific resistance: 0.5 MΩ•cm or more).
- A filter of 0.5 µm or less shall be used on the outlet side of the water supply equipment.
- The water pressure shall be 29.4 to 490 Pa.
- Mean water use volume: 40 l/h
- Max. momentary water use volume: 2.7 l/min (continuation: 41 sec)

■ Installation Space

Installation shall be performed so that the following space is kept as service space.



Equipment dimensions (unit: mm)

- Analyzer: Width 1850 x depth 800 x height 1240
- Data processor: Width 600 x depth 700 x height 1600

■ Power Supply

Voltage

Japan: AC 100 V or 200 V
Overseas: 110 V (USA), 230 V (Europe), 240 V (Australia), 110 V, 220 V (Asia)
Single phase, 50/60 Hz ± 1 Hz, voltage fluctuations: Within ± 10%

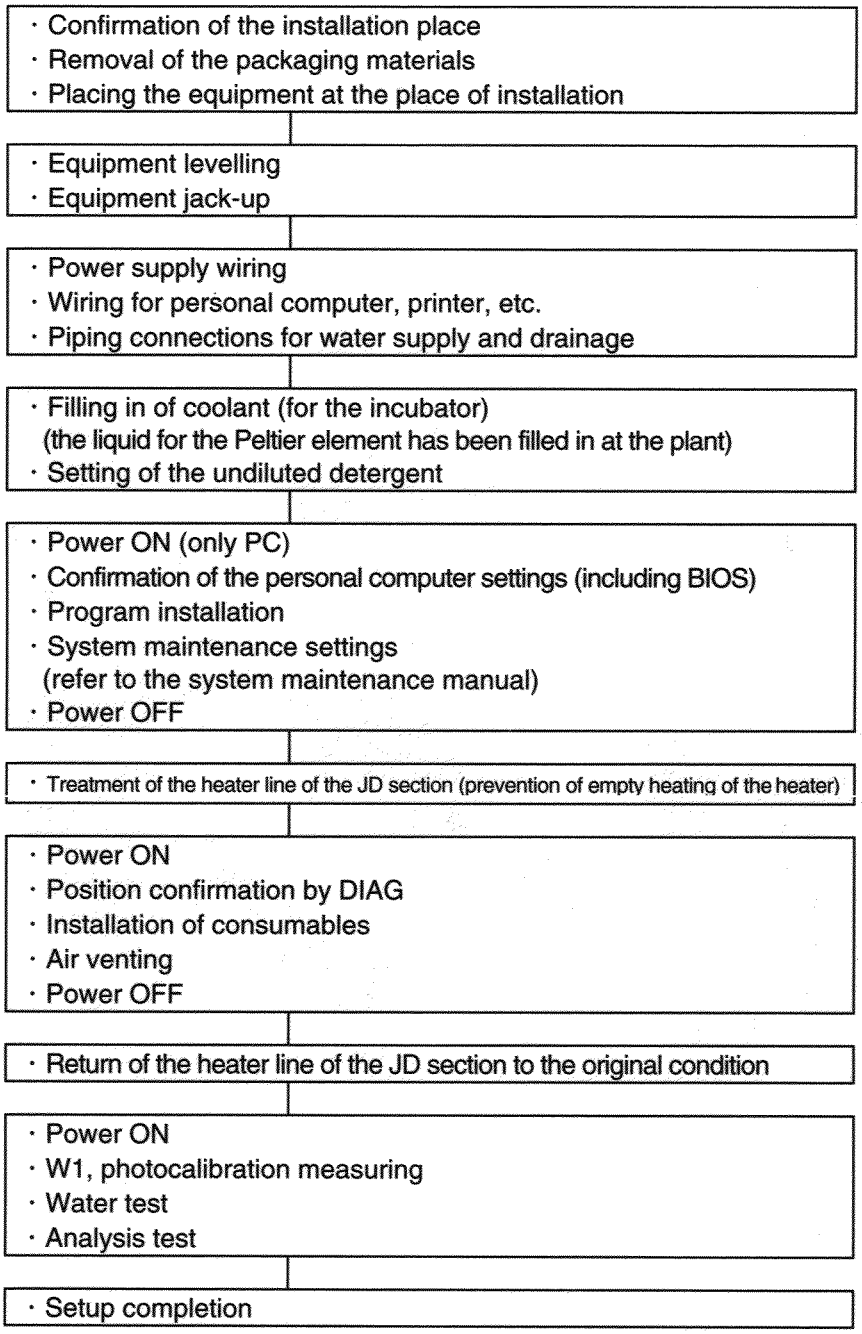
Power

4.0 kVA

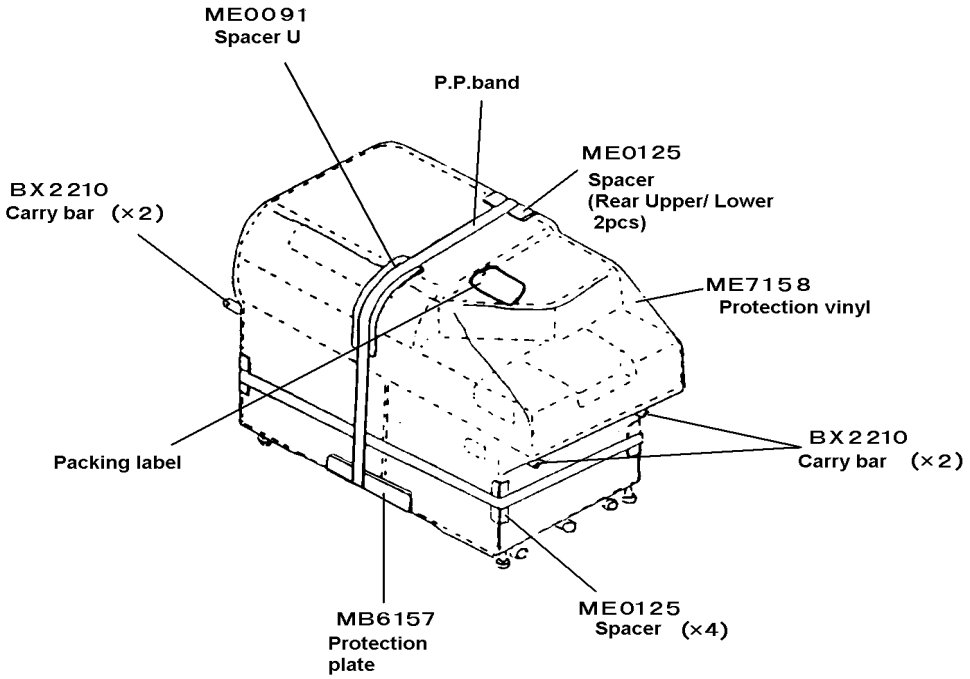
Switchboard

Within 10 m from the equipment (within reach of the standard power supply cable (10 m))

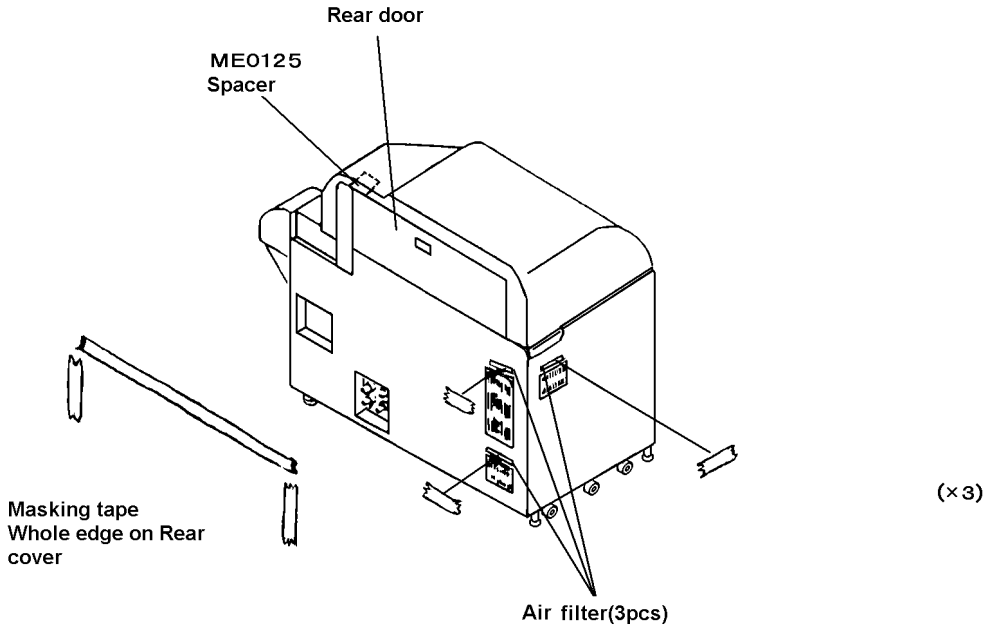
■ Setup Flow


· Confirmation of the installation place
· Removal of the packaging materials
· Placing the equipment at the place of installation
· Equipment levelling
· Equipment jack-up
· Power supply wiring
· Wiring for personal computer, printer, etc.
· Piping connections for water supply and drainage
· Filling in of coolant (for the incubator)
(the liquid for the Peltier element has been filled in at the plant)
· Setting of the undiluted detergent
· Power ON (only PC)
· Confirmation of the personal computer settings (including BIOS)
· Program installation
· System maintenance settings
(refer to the system maintenance manual)
· Power OFF
· Treatment of the heater line of the JD section (prevention of empty heating of the heater)
· Power ON
· Position confirmation by DIAG
· Installation of consumables
· Air venting
· Power OFF
· Return of the heater line of the JD section to the original condition
· Power ON
· W1, photocalibration measuring
· Water test
· Analysis test
· Setup completion

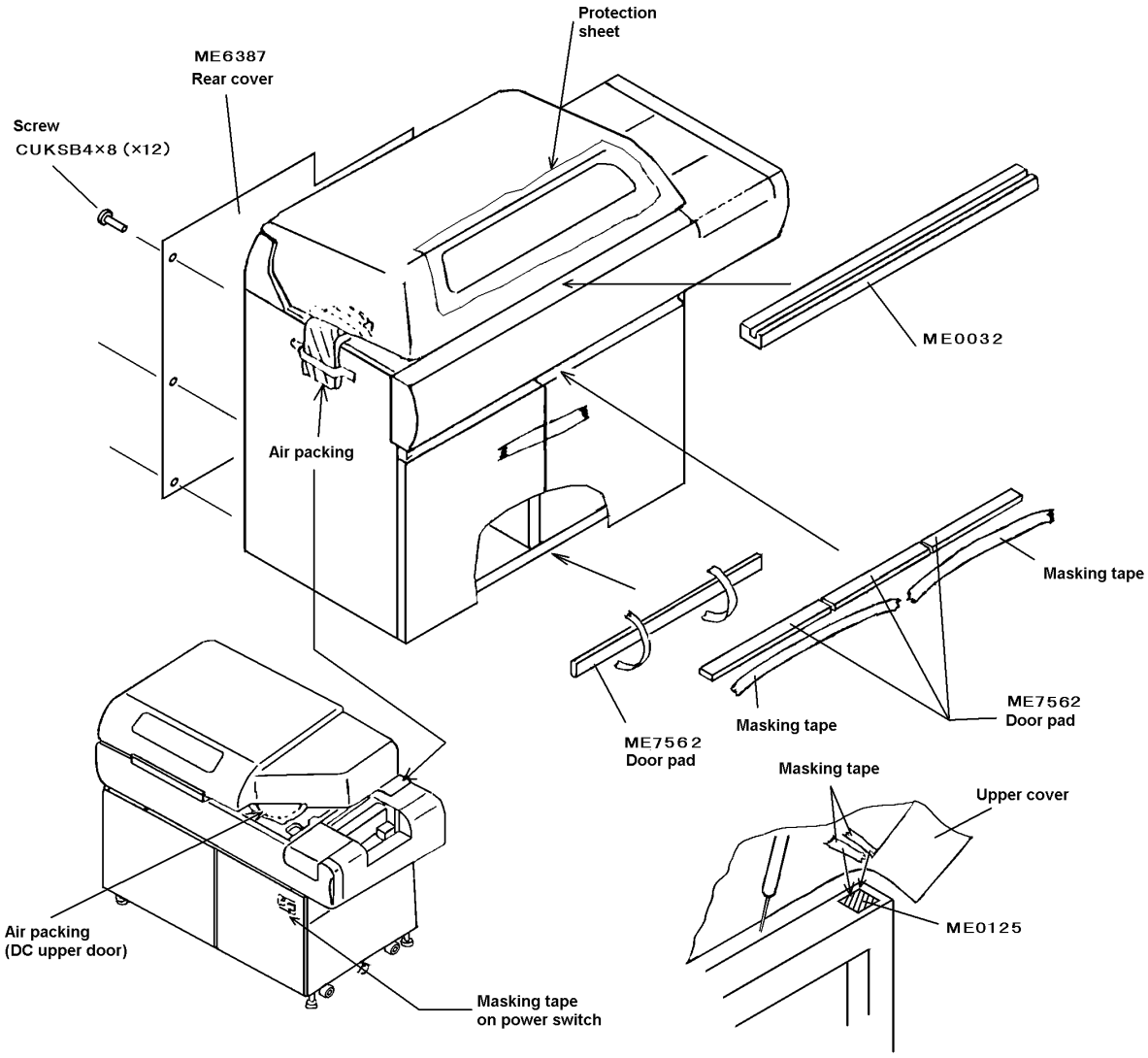
■ Out side protection
Remove PP band, Protection vinyl, Carry bar.



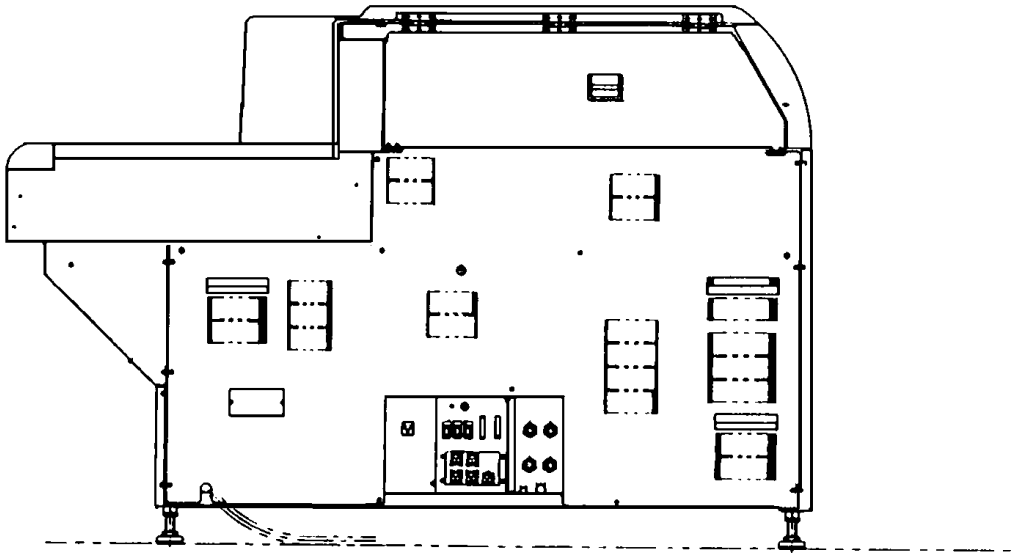
Remove masking tape(3 x Air filter, Rear door).

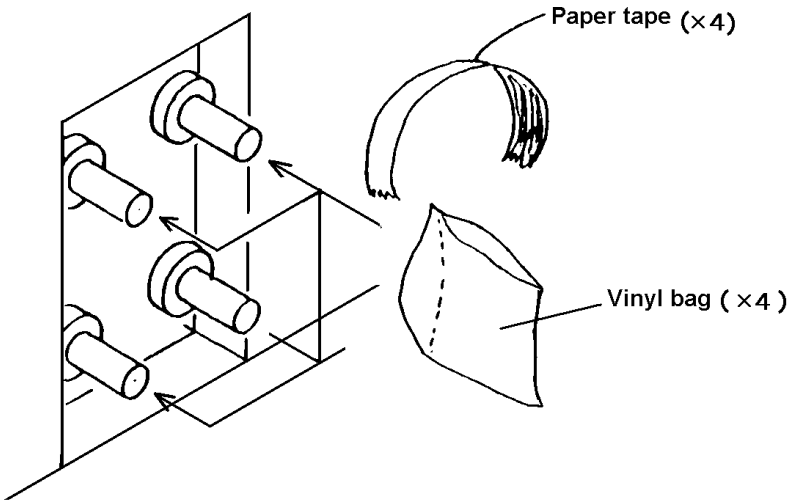


■ Remove cover protection

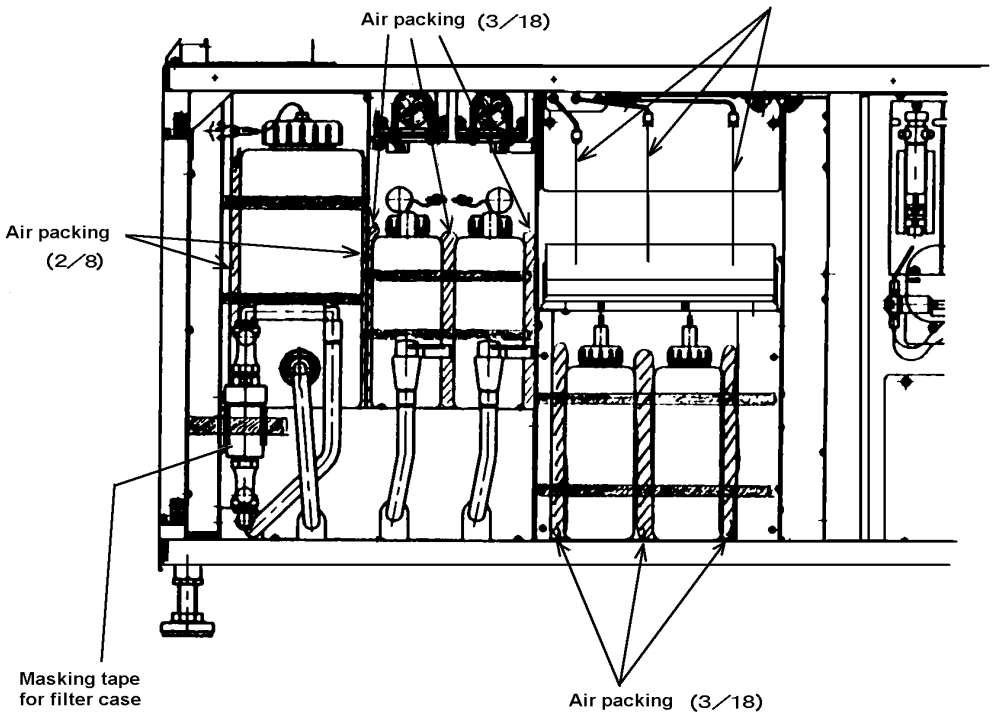


■ Protection for piping
Remove vinyl of protection for rear piping

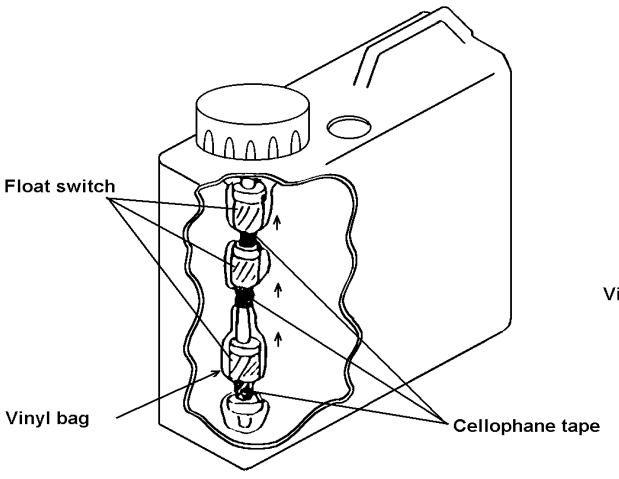




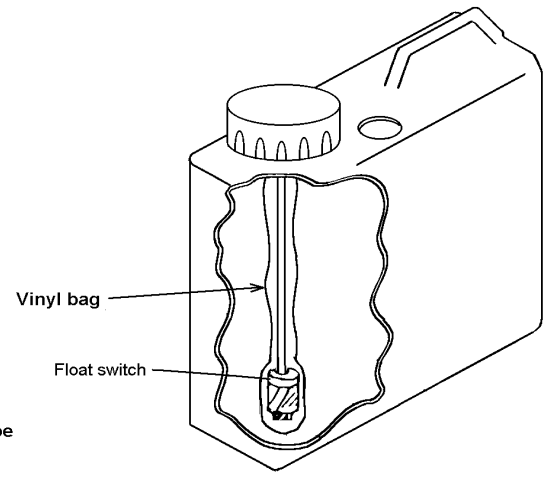
■ Remove protection for tanks



■ Remove protection vinyl for float switch



- Detergent tank A・B Vinyl bag
- DI water tank Vinyl bag

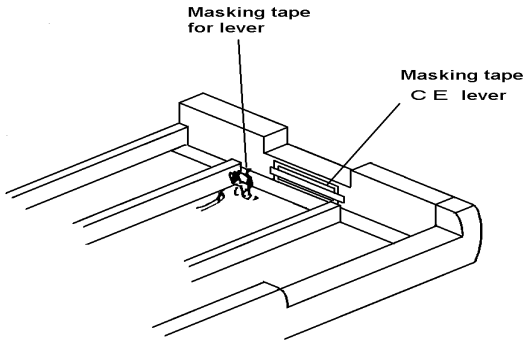


Pure detergent tank A・B

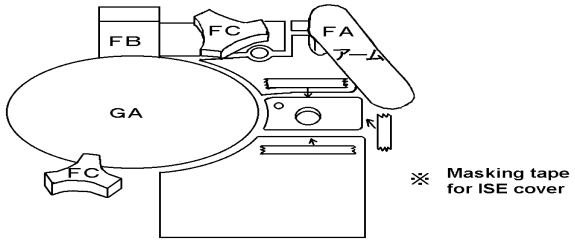
■ Unit fixing masking tape

Remove masking tapes and packing material for each unit.

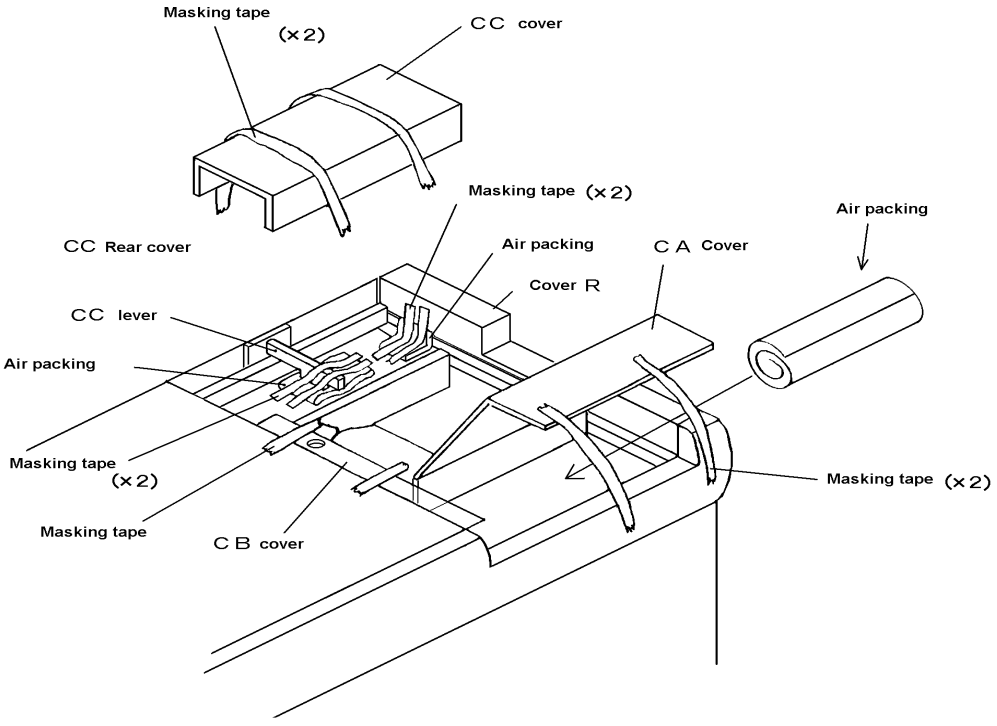
CE/CH



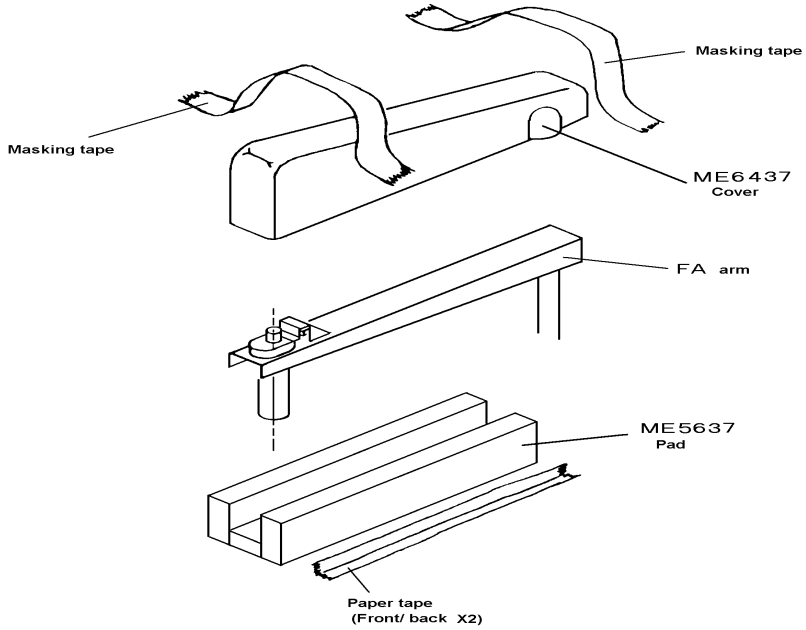
ISE cover



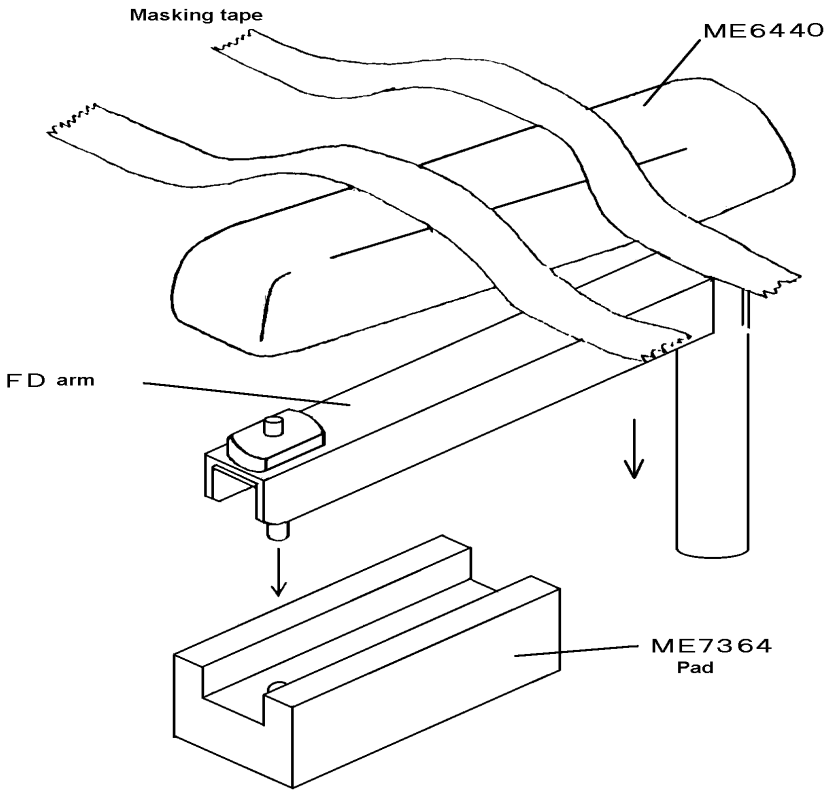
• CA/CB/CC



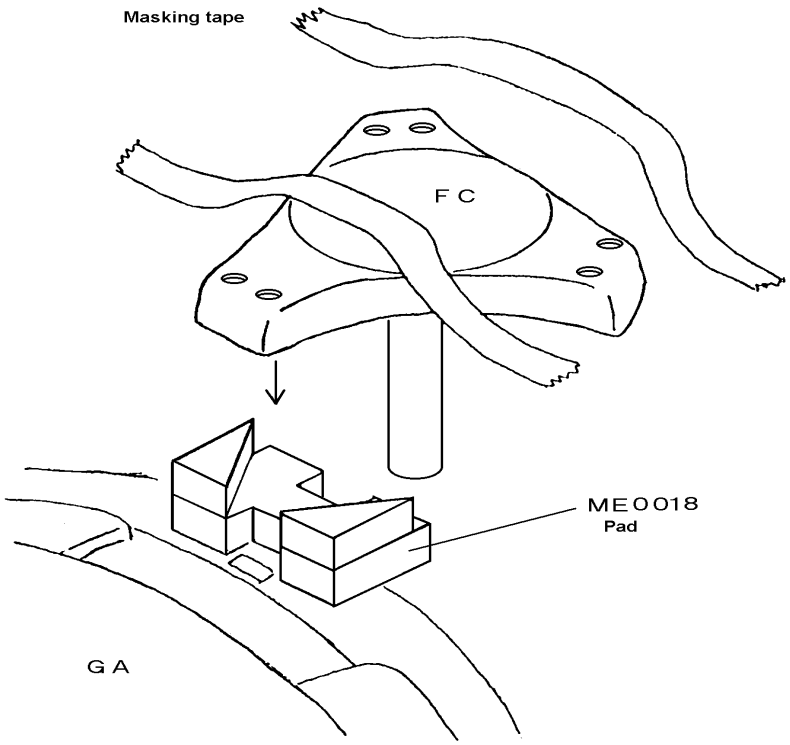
• FA


Masking tape
Masking tape
ME6437
Cover
FA arm
ME5637
Pad
Paper tape
(Front/ back X2)

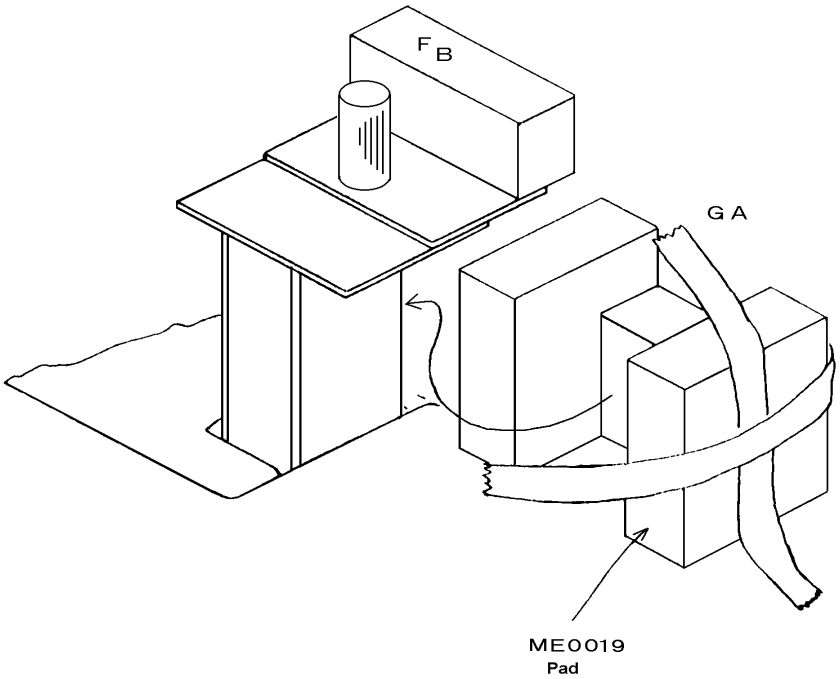
• FD01/11


Masking tape
ME6440
FD arm
ME7364
Pad

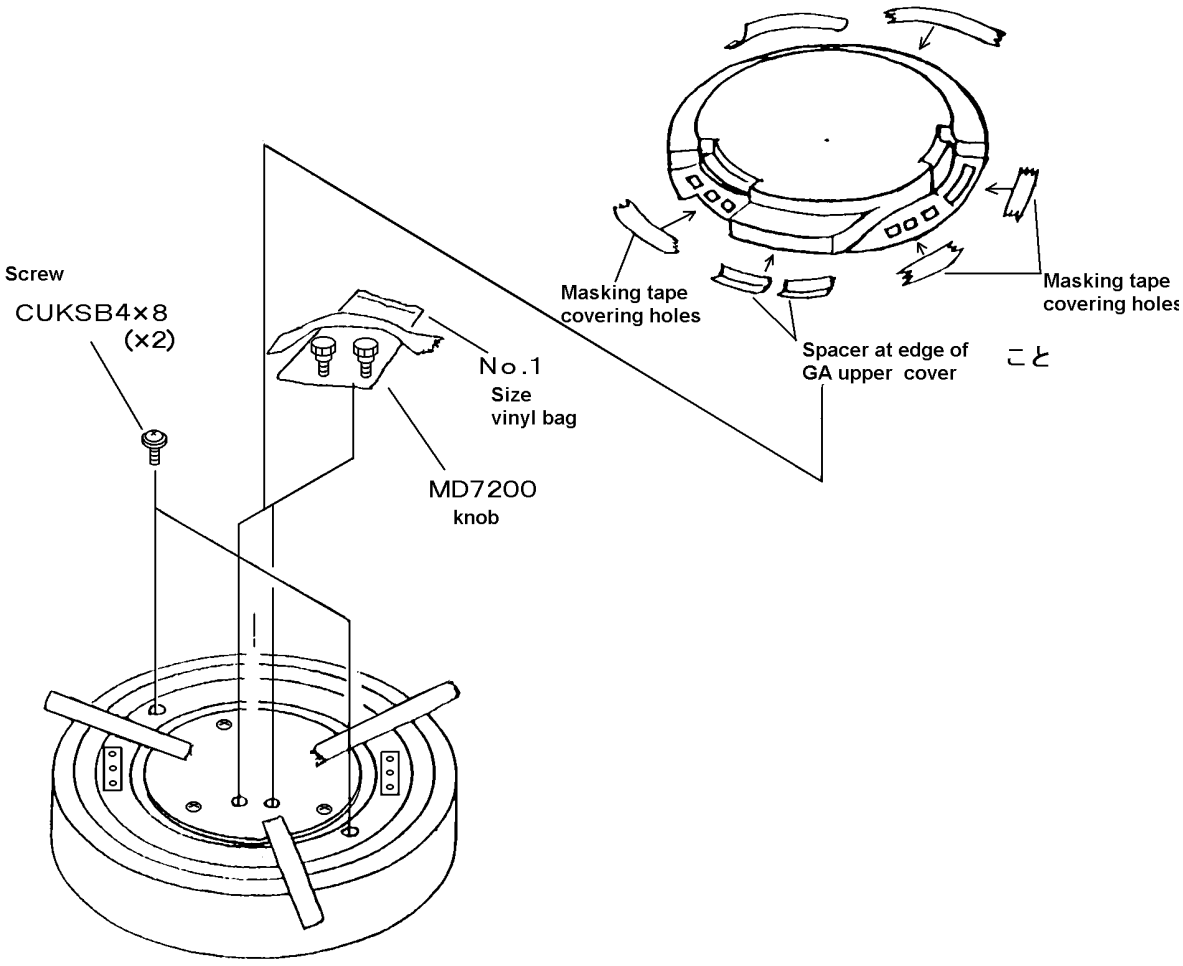
• FC01/11



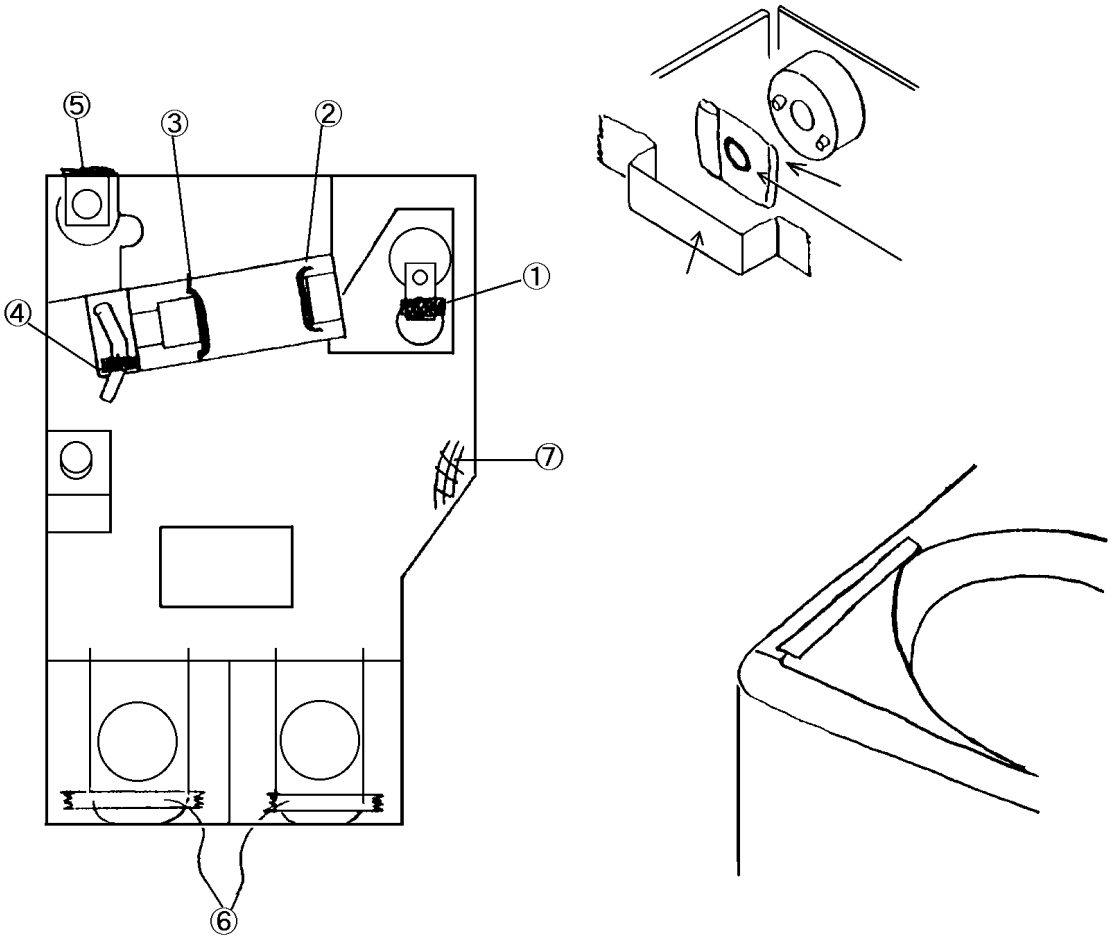
• FB



• GA
Remove masking tape and vinyl bag



• ISE
Remove the following masking tape.
1) Knob for mix motor
2) O ring for electrode block
3) Knob and protection of piping for electrode block
4) Lever
5) Waste bracket
6) P tube
7) Wire



■ Unpack accessory box

Accessory box 1
Flower plate, power cable, braid hose, rack, S probe, R probe, lamp, mix bar, other maintenance tools, etc

Accessory box 2
DA upper cover, DC upper cover

Accessory box 3
2 x coolant

■ Equipment Installation

● Equipment Leveling

(1) Place the support plates under the jacks of the AU640. (Place them so that they look good.)
(2) Turn the four jacks each for the same number of turns. When the casters no longer are in contact with the ground, use a level gauge or similar to confirm the level of the equipment. (For the confirmation, open the front cover and place a level gauge onto the frame.)
(3) Adjust the jacks so that the equipment becomes level.

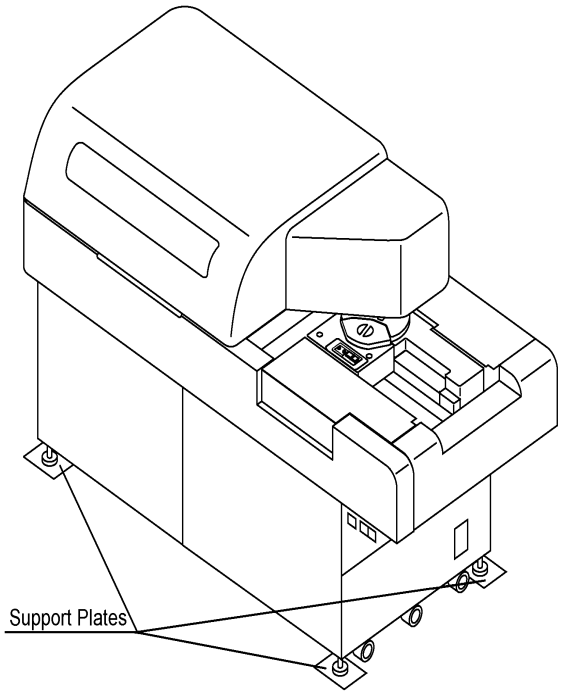


Fig.1

■ Power Supply Wiring

- Wiring between the AU640 and the installed switchboard

⚠ WARNINGS
1. In order to prevent electric shocks and short-circuits during disassembly and assembly, switch off the main power supply and wait for at least 10 seconds before you start the work. 2. In order to prevent electric shocks and short-circuits, never touch electric parts and wiring with wet hands.

(1) Remove the rear cover of the equipment.
(2) Connect the accessory power cable at the power inlet part A of Fig. 1.
(3) Connect the power cable to the installed switchboard.

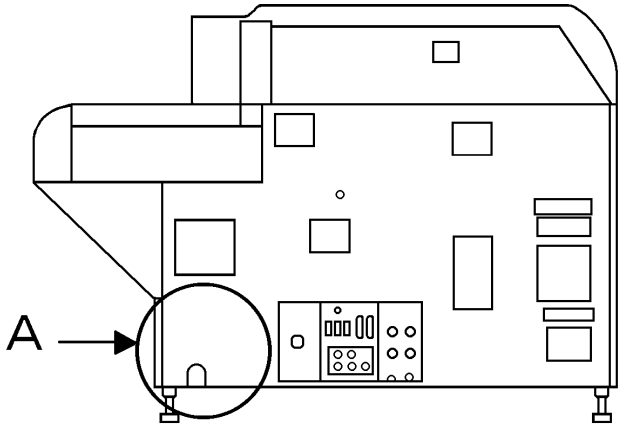


Fig. 1

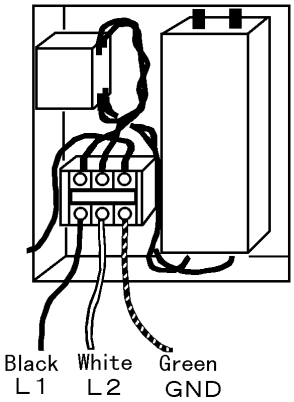


Fig. 2

⚠ CAUTIONS
1. Before connecting the power cable, use a tester to confirm that the power supply is switched off. 2. Before connecting the power cable, use a tester to confirm the voltage on the installation side, as well as the hot and the cold wire.

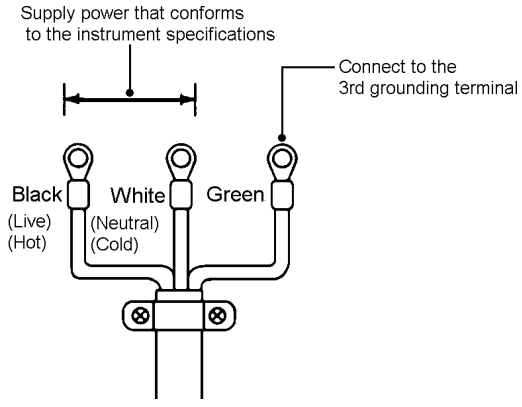


Fig. 3

■ Wiring for personal computer

Make the following connections to the personal computer.

● CRT & PC

CRT	Connect to	Note
Power supply	[Constant power supply output] for PC	
AUDIO IN	[LINE OUT] connector for PC	
CRT signal	[Display] connector for PC	

● PC and standard accessories

PC	Connect to	Note
Power supply	Output from JD portion of ANL If the PC and printer are both connected to the JD portion, split the power using the table tap.	
Keyboard	[KEYBOARD] connector for PC	
Mouse	[MOUSE] connector for PC	

● PC and standard printer

Printer	Connect to	Note
Power supply	Output from JD portion of ANL If the PC and printer are both connected to the JD portion, divide the power by the table tap.	
Printer signal	[Parallel] connector for PC	Parallel 1

● PC and ANL

PC (Communication with ANL)	Connect to	Note
Serial connector 1	[COM1] connector at JD portion of ANL	Serial 1
Serial connector 2	[COM2] connector at JD portion of ANL	Serial 2

● Special accessories and others

Option	Connect to	Note
Option printer	[Parallel] connector at extension board of PC	Parallel 2
On-line	[Serial 1] connector at extension board No.1 of PC	Serial 3
Modem	[Serial 2] connector at extension board No.1 of PC	Serial 4
Touch panel signal	[Serial 1] connector at extension board No.2 of PC	Serial 5

■ Installation of the personal computer

- CRT & PC

***** CAUTION *****

1. Do not install the personal computer in an unstable location. There is the danger of injury from dropping.
2. Do not close the air hole. There is the danger of fire from a stuffed air.
3. Do not istall the personal computer at a location where it is exposed to water or other liquids. There is the danger of erroneous operation or fire.

- Connection of the personal computer

***** CAUTION *****

1. To prevent electric shocks and short circuits do not touch electric parts and wiring with wet hands.
2. Do not insert the power plug into a receptacle while dust or other foreign matter adheres to the plug. There is the danger of fire.
3. Insert the power plug positively all the way.
4. Contact all cables correctly. A wrong connection can cause trouble.

Connect the ports of the personal computer according to the following table.
For other connections than the following ones, follow the manual for the personal computer.

PC	Connecting	Remarks
Serial 1	ANL	Communication 1 of ANL
Serial 2	ANL	Communication 2 of ANL
Serial 3	(Host computer)	
Serial 4	Modem	Option
Serial 5	Touch panel (except for OAI)	Option
Parallel 1	Printer	
Parallel 2	Optional printer	Option

■ Piping for Water Supply and Drainage

- Tube connections for concentrated waste liquid, diluted waste liquid, exhaust air, and water supply

Connect braided hoses to the mouthpiece at the rear of the equipment and fix them with metal bands. (Refer to Fig. 1.) Refer to the following table for the connection tubes.

Mouthpiece	Tube
Concentrated waste liquid	Braided hose 15 x 22
Diluted waste liquid	Braided hose 15 x 22
Exhaust air	Braided hose 12 x 18
Water supply	Braided hose 12 x 18

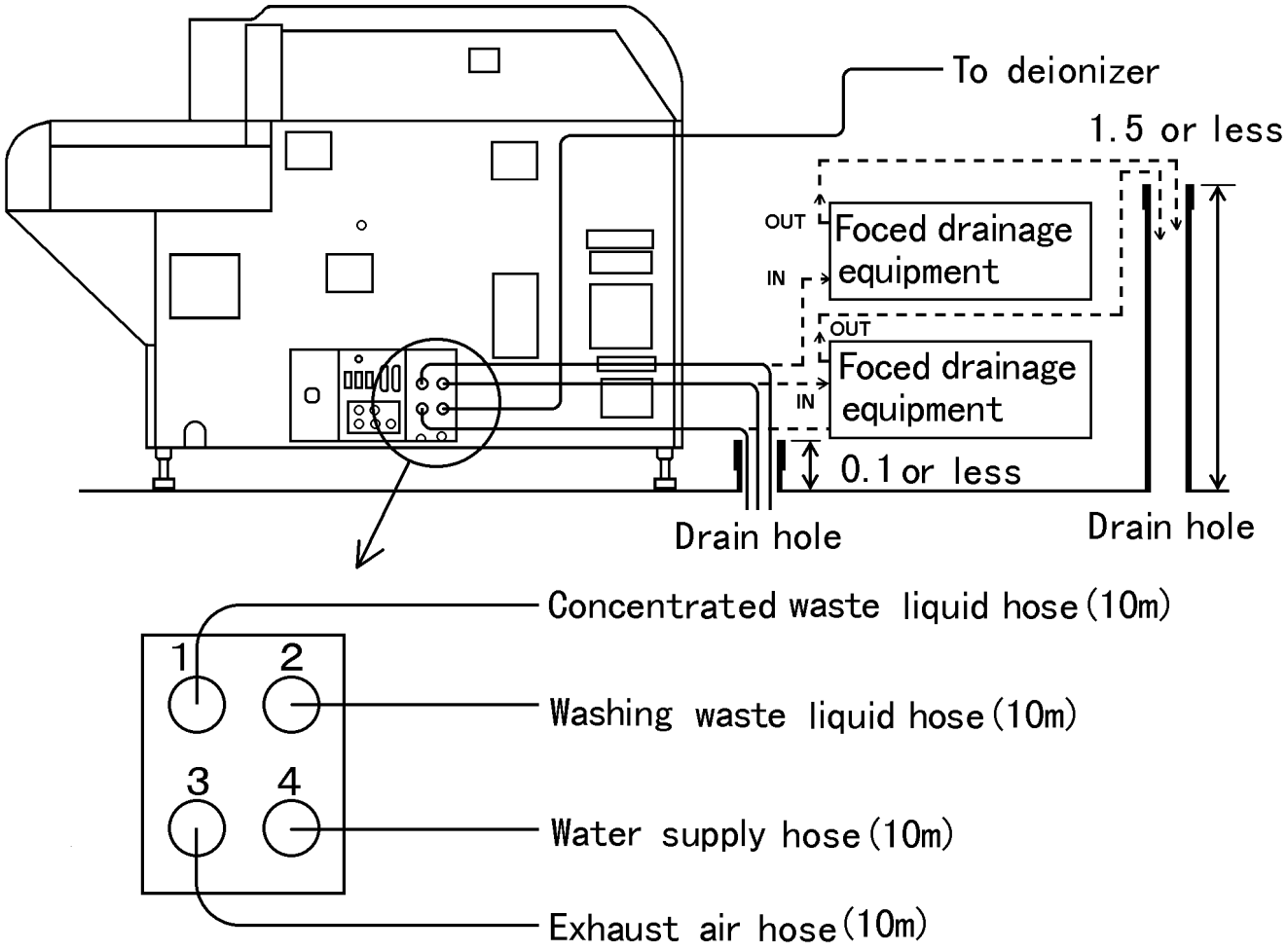


Fig. 1

■ Connection of the Forced Liquid Discharge Unit and the Optional Water Supply Valve

● Connection of the forced liquid discharge unit

1. Tube Connection to the Forced Liquid Discharge Unit

Connect the concentrated waste liquid tube to the lower mouthpiece of [IN] of the first forced liquid discharge unit.
Plug the upper mouthpiece of [IN] of the first unit with the accessory plug of the forced liquid discharge unit.
Connect the diluted waste liquid tube to the lower mouthpiece of [IN] of the second forced liquid discharge unit.
Connect the exhaust air tube to the upper mouthpiece of [IN] of the second unit.
Route the tube connected to the [OUT] mouthpiece to the drainage port of the installation site. (Refer to Fig. 1.)

2. Power Supply Connection for the Forced Liquid Discharge Unit

Connect the power supply line and the signal line of the forced liquid discharge unit to the respective connectors of the JD section (refer to Fig. 2).

***** Caution *****

The [OUT] piping of the forced liquid discharge unit shall have a max. height of 1.5 m.

● Connection of the optional water supply valve

Connect the tube from the main tap to the [IN] mouthpiece of the solenoid valve, and connect the tube connected to the [OUT] mouthpiece to the inlet line of the purifier.
Connect the control line of the solenoid valve to the connector of the JD section (refer to Fig. 2).

***** Caution *****

When the purifier is a resin cylinder type, connect the solenoid valve to the inlet of the resin cylinder. Bursting is to be feared when the solenoid valve is connected to the outlet side.

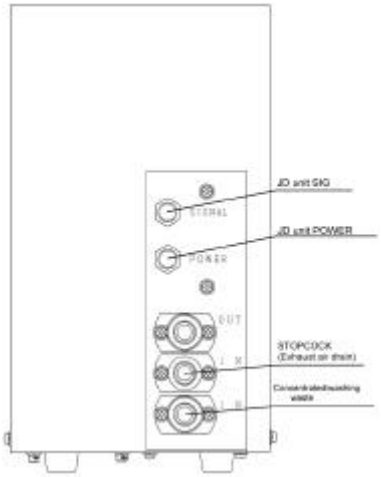


Fig. 1

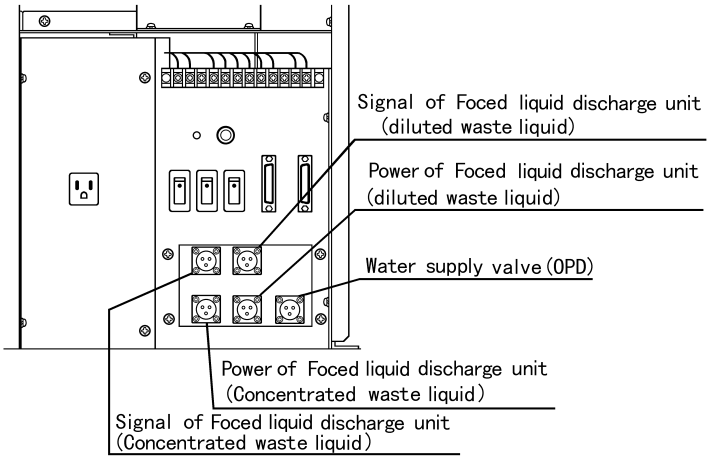

Signal of Foced liquid discharge unit
(diluted waste liquid)
Power of Foced liquid discharge unit
(diluted waste liquid)
Water supply valve(OPD)
Power of Foced liquid discharge unit
(Concentrated waste liquid)
Signal of Foced liquid discharge unit
(Concentrated waste liquid)

Fig. 2

■ Setting of Coolant and Undiluted Detergent

● Coolant setting

(1) Remove the cover of part A in Fig. 1.
(2) Remove the cap from the filling port under the cover and fill in coolant.
(3) Place the cap onto the filling port.
(4) Switch on the power for the equipment and confirm the liquid quantity.
*Follow the procedure on the following pages to switch on the power for the equipment.
(5) Install the cover of part A in Fig. 1.

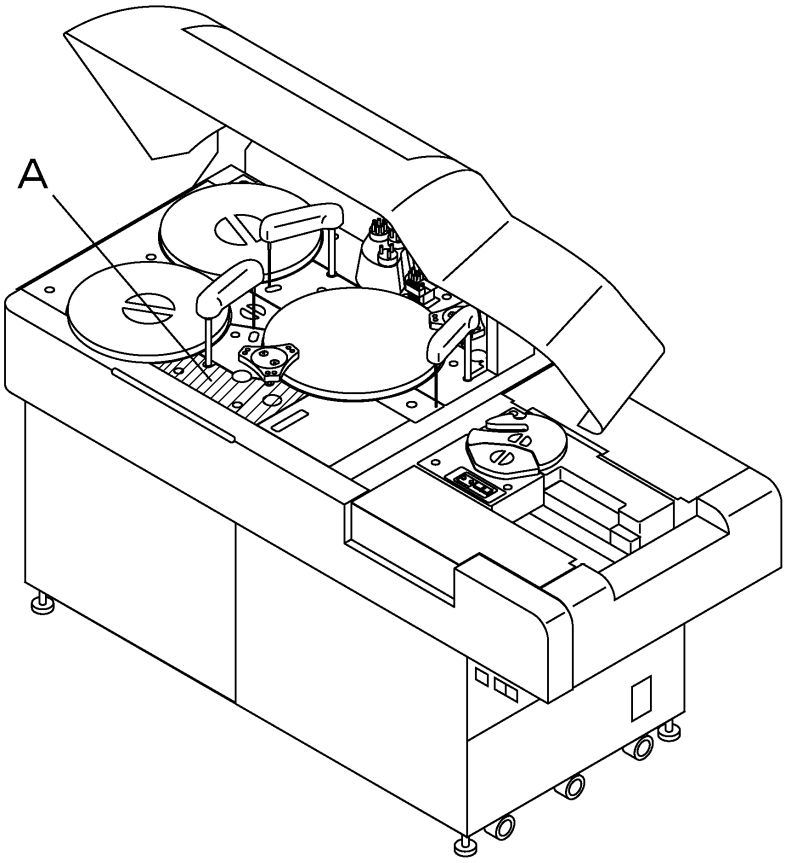


Fig. 1

● Setting of undiluted detergent

(1) Open the front cover of the AU640.
(2) Set the undiluted detergents A and B as shown in Fig. 2.

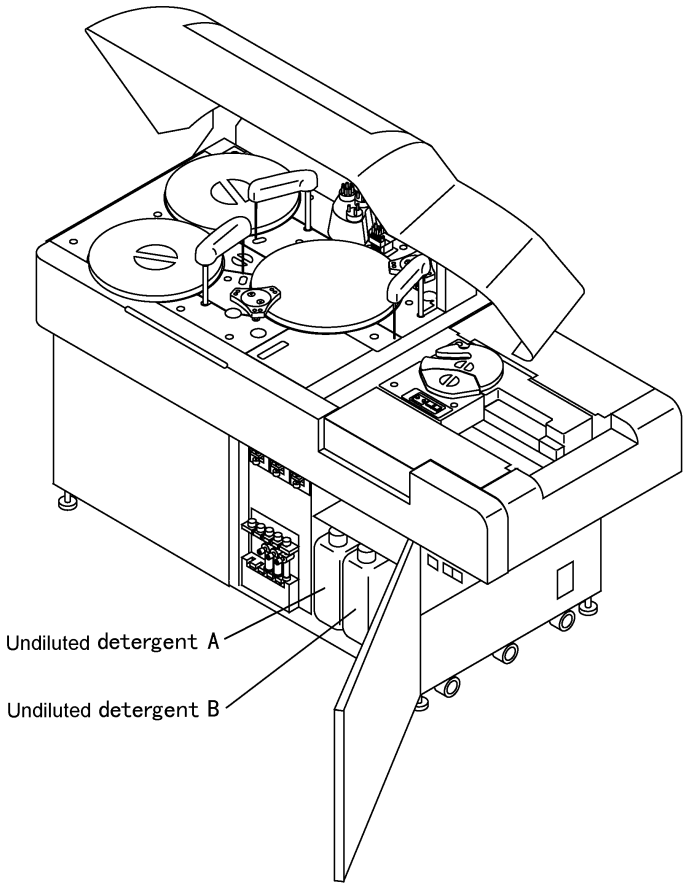


Fig. 2

■ Setup of the Personal Computer

● Setting of the personal computer

(1) Before setting the power switch of the AU640 to ON, boot the computer by itself.

(2) Install Windows NT.
*Install as required.

(3) Set the BIOS.
*For details, refer to the system maintenance manual.

(4) Set the Windows NT environment.
*For details, refer to the system maintenance manual.

(5) Install the program for the AU640.
*For details, refer to the system maintenance manual.

(6) Perform the AU640 system maintenance settings.
*For details, refer to the system maintenance manual.

(7) Switch off the personal computer after all settings have been made.

■ Heater Line Treatment for the JD Section

● Purpose of the work

With new equipment, no water is circulating through the piping, and if the power is switched on in this condition, it is to be feared that the thermal fuse of the heater for wash water heating may blow. When this fuse has blown, it can be reset by hand, but as this is not easy, it is better to perform this work to prevent blowing of the fuse.

● Treatment method

(1) Disconnect the heater line at the terminal block of the JD section at the rear of the ANL. (Part A in Fig. 1)
(2) Insulate the disconnected cable with vinyl tape or similar.

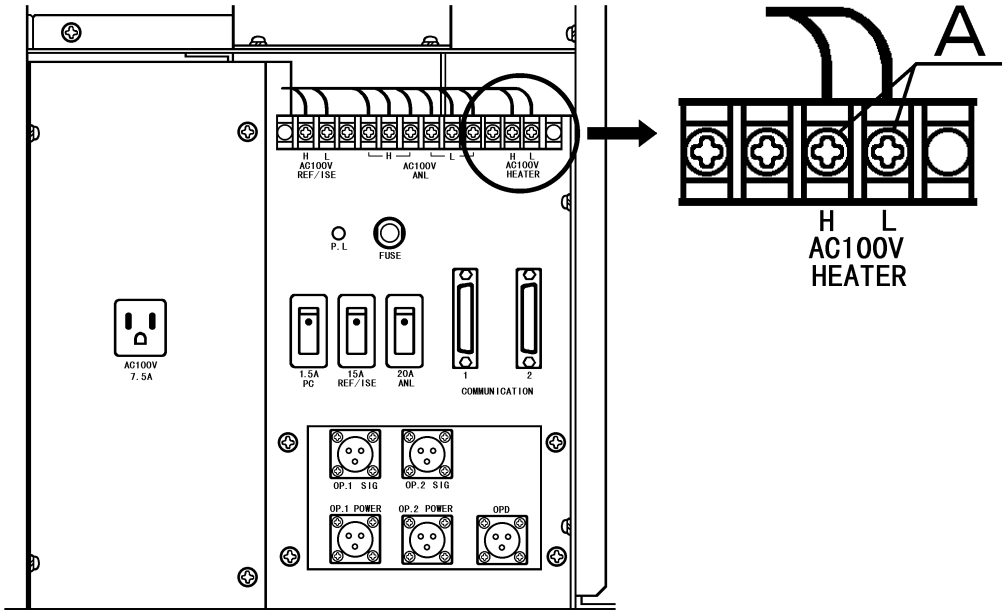


Fig.1

■ Equipment Start

● Power ON

When setup of the personal computer and terminal treatment at the JD section have been completed, switch on the equipment power supply and confirm the positions of the various parts and the operation.

(1) Open the main water tap.

(2) Set all circuit breakers of the equipment to ON. (Main, PC, REF/ISE, ANL)
Turn on the ISE switch at right front. Door.

(3) Press the switches [RESET] and [ON] at the lower part of the CA section in this order to start the equipment.

(4) The water supply valve opens as soon as power is supplied to the equipment, and deionized water is filled into the tank of the deionizer. At this time, check for water leakage from the main water tap, the purifier, the water supply mouthpieces of the equipment, etc. Also check the condition of the tank of the deionizer (water leakage from the mouthpieces, overflow, etc.).

(5) When the equipment mode becomes [WARM UP], detergent preparation starts. At this time, shake the tube supplying deionized water to vent any air. Also check the supply of undiluted detergent, leakage from the detergent tank, etc.

● Installation of consumables

Set the adapter of the DC unit, the recording paper of the printer, etc.
Install the sample probe, the reagent probe, and the mixing bar while performing position confirmation with the DIAG.

● Sample probe position confirmation

1. Position of cuvette and sample probe (refer to Fig. 1.)
   Position of cuvette for predilution and sample probe (refer to Fig. 1.)
2. Position of wash tank and sample probe (refer to Fig. 2.)
3. Position of sample tube (rack, DC unit) and sample probe (refer to Fig. 3.)
4. Position of ISE sample pot and sample probe (refer to Fig. 4.)

*When adjustment is required, refer to the adjustment manual.

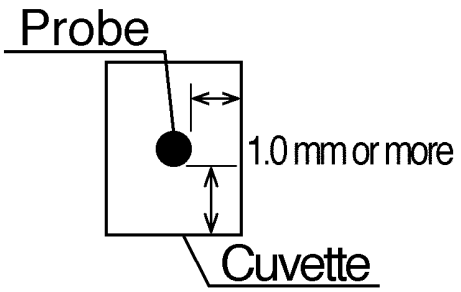


Fig. 1

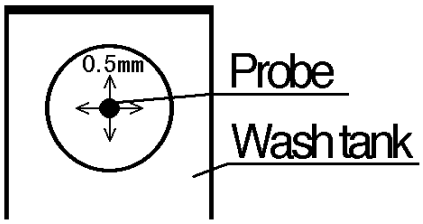


Fig. 2

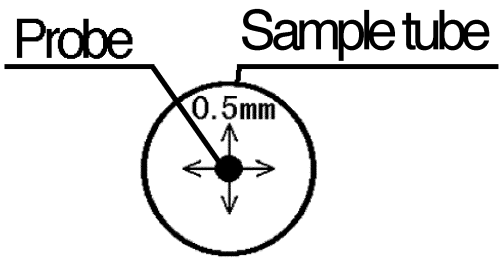


Fig. 3

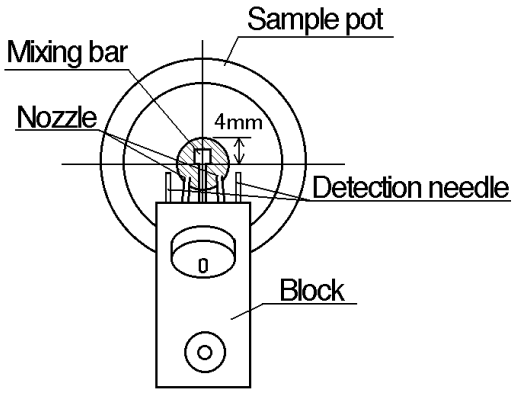


Fig. 4

Reagent probe position confirmation

1. Position of cuvette and reagent probe (refer to Fig. 1.)
2. Position of wash tank and reagent probe (refer to Fig. 2.)
3. Position of reagent bottle and sample probe (refer to Fig. 3.)

*When adjustment is required, refer to the adjustment manual.

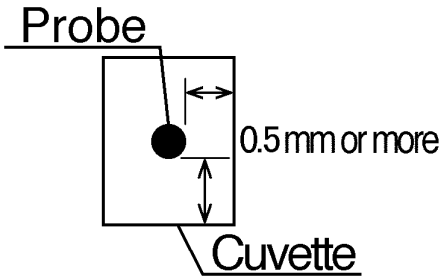


Fig. 1

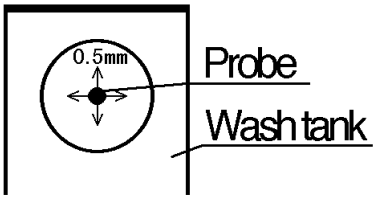


Fig. 2

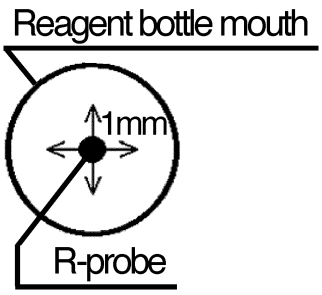


Fig. 3

● Mixing bar position confirmation

1. Position of cuvette and mixing bar (refer to Fig. 1.)
2. Position of wash tank and mixing bar (refer to Fig. 2.)

*When adjustment is required, refer to the adjustment manual.

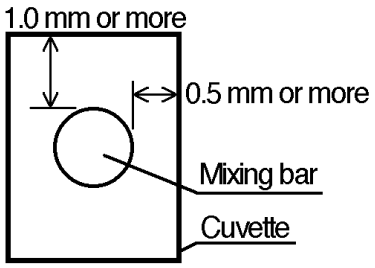


Fig. 1

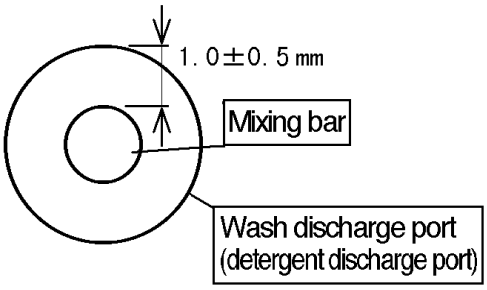


Fig. 2

● Dead volume confirmation

1. Rack dead volume

Type	Dead volume
Hitachi cup	50 µl
ACA cup	250 µl
ø 13 test tube	200 µl
ø 15 test tube	250 µl

2. DC unit dead volume

Type	Dead volume
Cup for minute volumes	30 µl (limited to aspiration quantities of 25 µl or less)
Hitachi cup	50 µl
Conical cup for STAT	50 µl
ACA cup	250 µl
ø 13 test tube	200 µl
ø 15 test tube	250 µl

3. Reagent bottle dead volume

Type	Dead volume
15 ml bottle	350 µl
30 ml bottle	1 ml
60 ml bottle	1 ml

*When adjustment is required, refer to the adjustment manual.
Set the dead volume of sample cup and STAT cups in system maintenance.

● Air venting

(1) After completion of position confirmation, confirm that the probe and the mixing bar are installed securely. (Also check that there is no looseness of the tube fastening part of the probe.) Also confirm the installation of the syringe (syringe case, mouthpiece looseness).

(2) Use the ANL maintenance menu to move the sample dispenser and the reagent dispenser up and down and vent any air. Perform a W1. This will remove any air in the tubing.

* If the air is not vented, remove with the entire syringe case from the dispenser and move the syringe up and down by hand to vent any air.

(3) Use the mixing sequence operation of the ANL maintenance menu to fill the wash line with wash water.

(4) Use the wash nozzle sequence operation of DIAG of ANL to fill with wash water.

For the ISE, fill with MID STD, Reference and Buffer in the tubing, properly.

***** Caution *****

Initially, there is air in the flow passages, so that there is the possibility that water will splash from the nozzle and will wet the cuvette. Initially, remove the nozzle section from the cuvette and receive the water with a container. After the air has been vented, set the nozzle discharge wash water into the cuvette, and confirm the washing condition.

● Treatment of the heater line of the JD section

(1) After air venting has been completed, switch off the equipment.

(2) Reconnect the previously disconnected heater line at the JD section. (Refer to page 6-1.)

● W1 execution

(1) Again switch on the equipment power after the heater line at the JD section has been restored.
(2) Execute W1 after the equipment has started.
* During W1 operation, confirm the wash water discharge condition and the aspiration condition. Confirmation is facilitated by removing the GA cover.

● Execution of photo calibration

(1) When W1 has been completed, close the GA cover and the upper cover of the body and execute photo calibration.
(2) When photo calibration has been completed, confirm that there is no error cuvette.

There shall be no error cuvette with the mean value check (range = 0.03).

(3) If an error cuvette has occurred, confirm the respective cuvette, and execute photo calibration again after cleaning or exchange.
(4) Repeat the above operation until there is no error cuvette.

■ Analysis Operation Confirmation

⚠ Caution
When analysis operation confirmation is performed while air has not been vented completely, there may be data scatter. Perform analysis operation confirmation after the air has been vented sufficiently.

● Water test

After completion of W1 and photo calibration, perform a water test and confirm the photometry system.

(1) Enter the following parameters to the AU640.

Name	340 nm	480 nm	600 nm
CH	R1=1	R1=2	R1=3
Sample volume	2	2	2
Sample dilution volume	0	0	0
Pre-dilution rate	1	1	1
R1 volume	50	50	50
R1 dilution volume	100	100	100
R2 volume	0	0	0
R2 dilution volume	0	0	0
Wavelength (Pri.)	340 nm	480 nm	600 nm
Wavelength (Sec.)	410 nm	660 nm	800 nm
Method	END1	END1	END1
Reaction slope	+	+	+
Measuring point1, first	1	1	1
Measuring point1, last	27	27	27
Calibration type	MB	MB	MB
MB typeFactor	10000	10000	10000

* Other range settings etc. shall be to the maximum value.
The setting for Name, CH, and reagent bottle position shall be as desired.

(2) Prepare degassed water (deionized water when this is difficult to obtain) with P8P (triton 100x) added to 0.1%. (153 samples x 4 tests (for reagent))
(3) Set sample tubes for 153 samples into a white rack and fill deionized water into the tubes.
(4) Fill the degassed water with triton, prepared in step 2), into a reagent bottle and set it into the refrigerator.
(5) Use the normal sample accession in the routine menu to accept 4 items/153 samples.
(6) Start the analysis.
(7) Use 51 samples as one round and assure that each round satisfies the following standard.

Standard	340/410 nm range: Within 15 480/660 nm, 600/800 nm range: Within 10

● Analysis test

- Basically, it can be judged that there are no problems for the photometry system and the dispensing system, as the results of the water test and the dispensing test are within the standard range, so that the equipment setup is ended for the time being.
- When reagent has been prepared, perform analysis as required and check the data.

■ ISE Analysis Operation Confirmation

● Check calibration

(1) Pour 1 ml each of HIGH and LOW standard liquid for blood serum into sample cups. Set the sample cups on the STAT table.

(2) Execute ISE diagnosis, calibration selection, and serum calibration.

(3) Make sure that the slope values meet the standards shown below. Repeat serum calibrations three times continuously, and the slope values of these calibrations should meet the standards shown below.

	Normal range
Na	38 to 65 (mv/dec)
K	38 to 65 (mv/dec)
Cl	-38 to -65 (mv/dec)

(4) If the slope values do not meet the standards, check if the tubes are filled with solutions, distribution quantities are proper, air does not enter the piping, etc.

● Analysis test

Materials Required

Standard liquid 3 (Standard liquid 3 is consumable parts. Order number: MS0088. Available in 250 ml bottles.)

Check Parameters (Already input on page 3-6.)

		SERUM			URINE		
		Na	K	CL	Na	K	CL
Sample dispense q'ty		25	25	25	25	25	25
Sample dilution q'ty		30	30	30	30	30	30
Dynamic range	L	-9999	-9999	-9999	-9999	-9999	-9999
	H	9999	9999	9999	9999	9999	9999
Correction factor	A	1	1	1	1	1	1
	B	0	0	0	0	0	0
Internal STANDARD concentration		140.0	4.0	100.0	140.0	4.0	100.0
External STANDARD concentration	L	130	3.5	85	50	10	50
	H	160	6.0	120	200	100	180
None Select		9999	9999	9999	9999	9999	9999
Calibrator condition							
Calibration curve type		MCAL	MCAL	MCAL	MCAL	MCAL	MCAL
Number of multiple measurements		4	4	4	4	4	4
Calibration curve factor	A	1	1	1	1	1	1
	B	0	0	0	0	0	0

(1) Set sample cups containing 40 samples in the white rack. Pour each 1 ml of standard liquid 3 into them. Set the sample cups in the CA (rack feeding unit).

(2) Start analysis.

(3) Carry out two rounds of analysis (one round: 40 samples). Totalize the results of two-round analysis. The values of each round should meet the standards shown below.

	Normal range		Center value	SD	CV (%)
Na	135 to 147	mEq/l	141	0.85	0.6
K	3.3 to 4.8	mEq/l	4.1	0.08	2.0
Cl	98 to 108	mEq/l	103	0.72	0.7

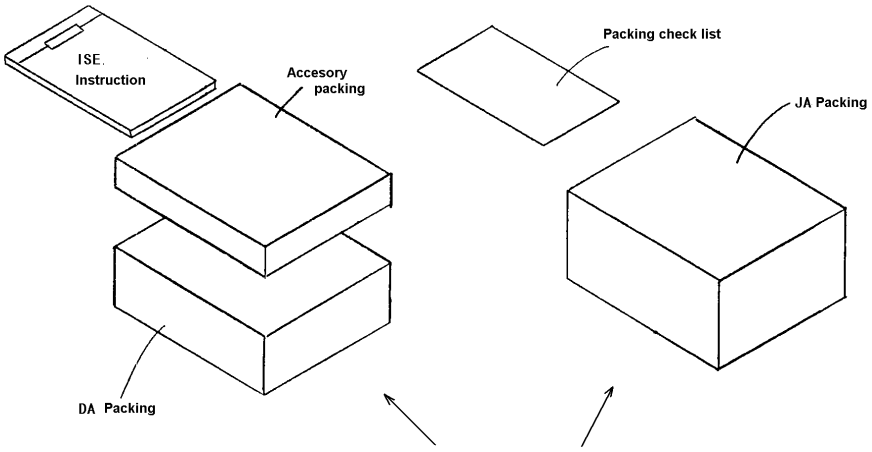
If the mean value is over the center value shown above, use the CV value for evaluation. If the mean value is less than the center value, use the SD value.

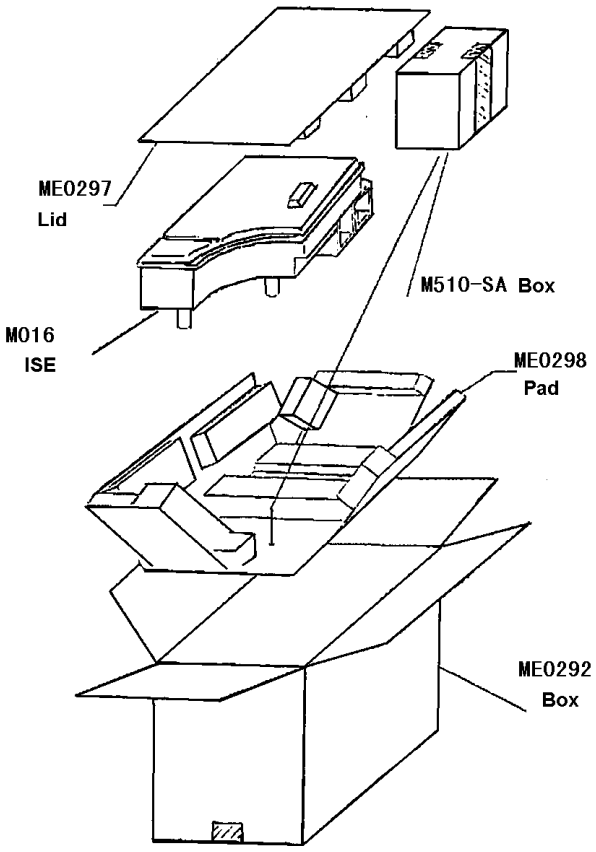
(4) If the standards are not met.

Recheck the parts, take appropriate countermeasures, then retry analysis.

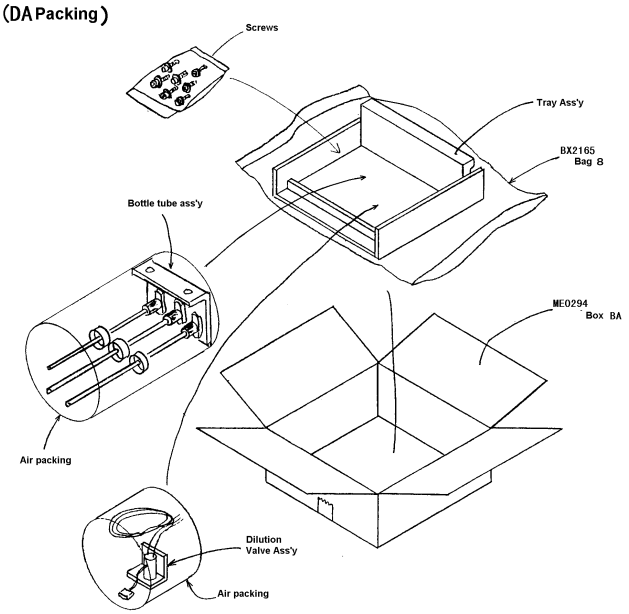
■ Unpacking

(Unpacking)





(DA Packing)



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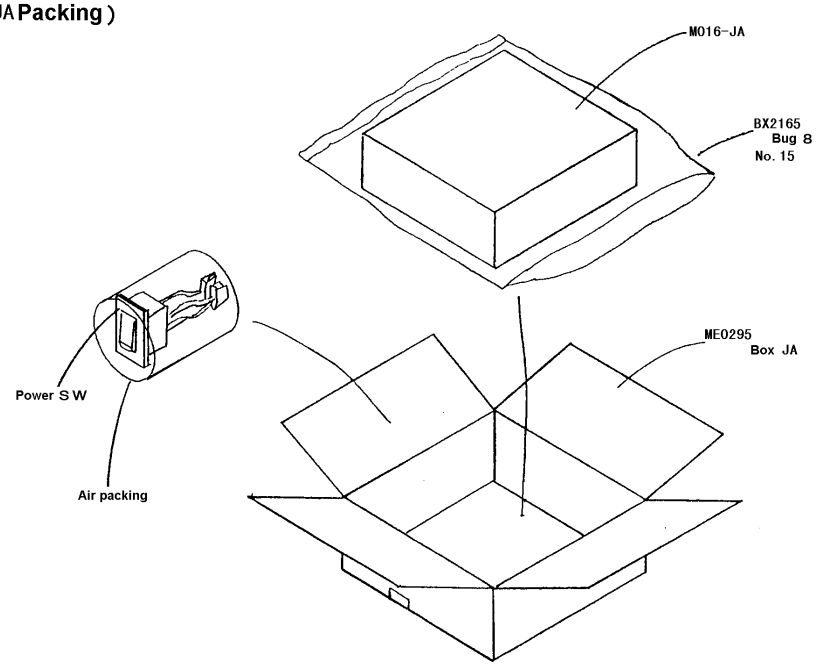
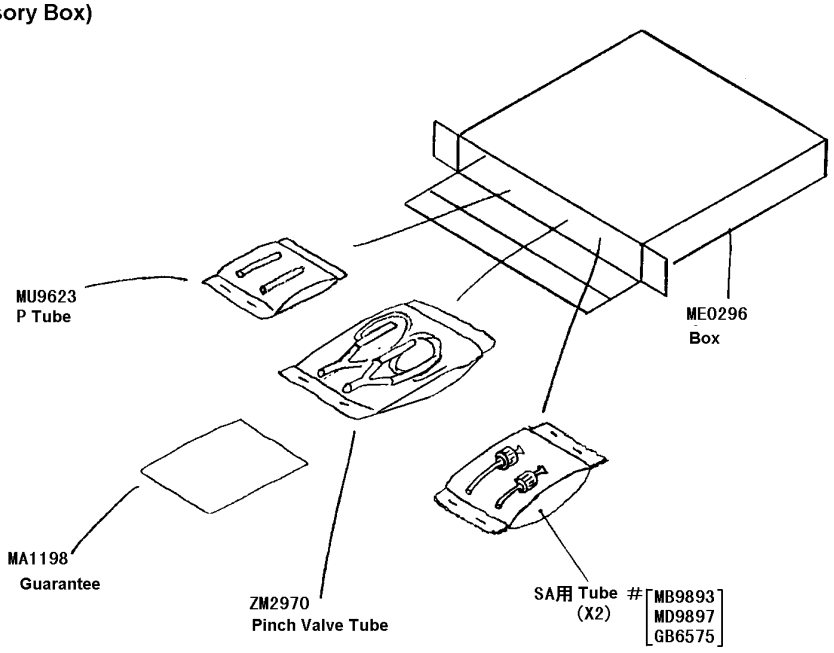
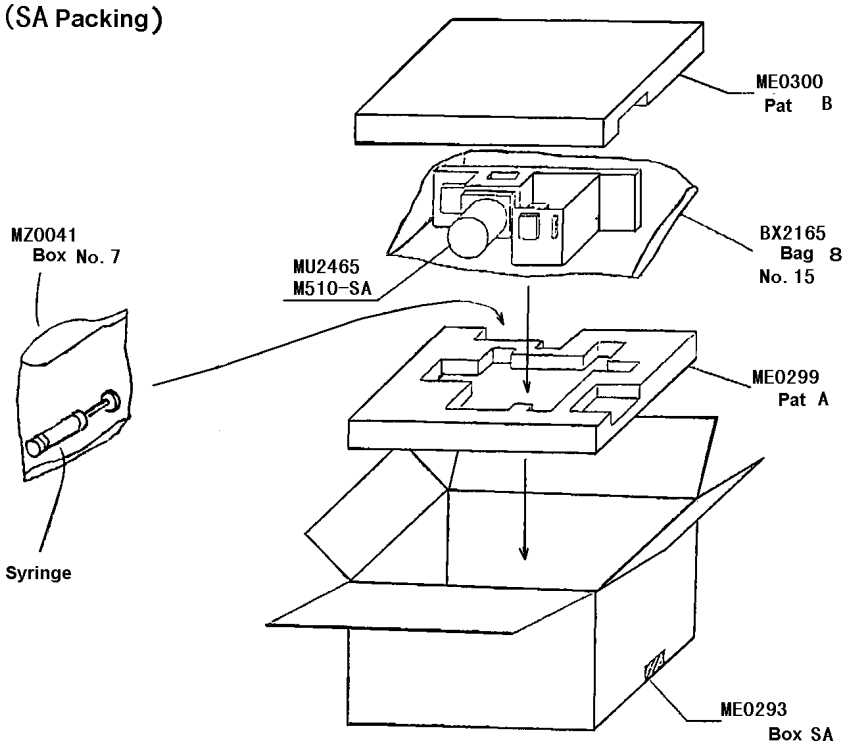


(Accessory Box)

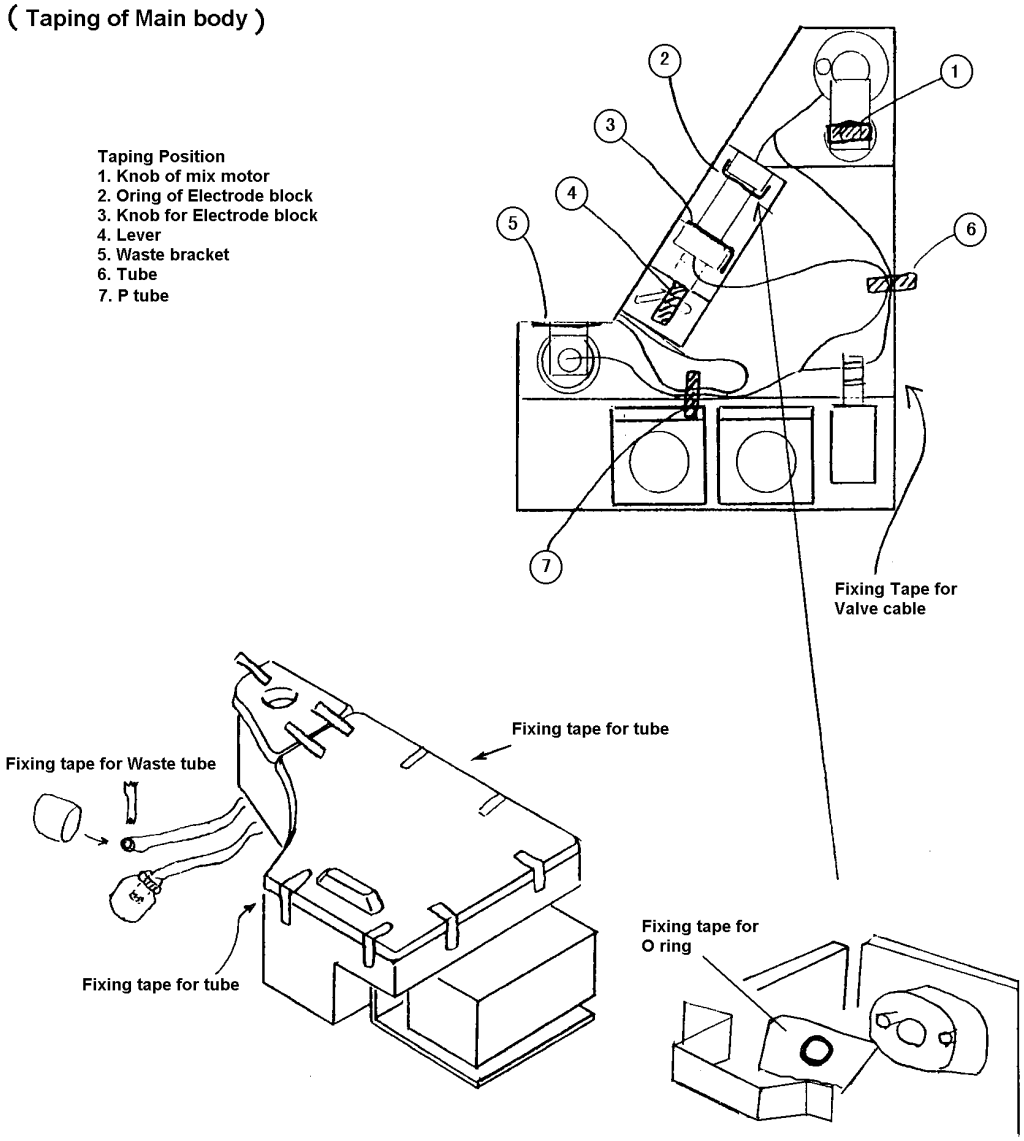


(SA Packing)



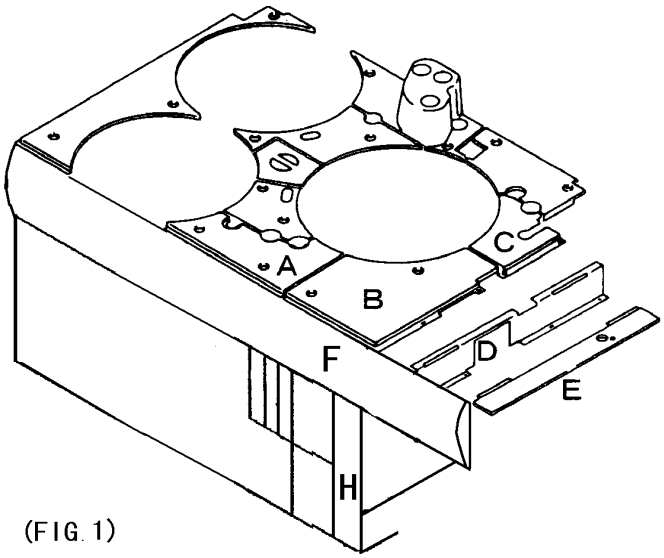
(Taping of Main body)

Taping Position
1. Knob of mix motor
2. Oring of Electrode block
3. Knob for Electrode block
4. Lever
5. Waste bracket
6. Tube
7. P tube

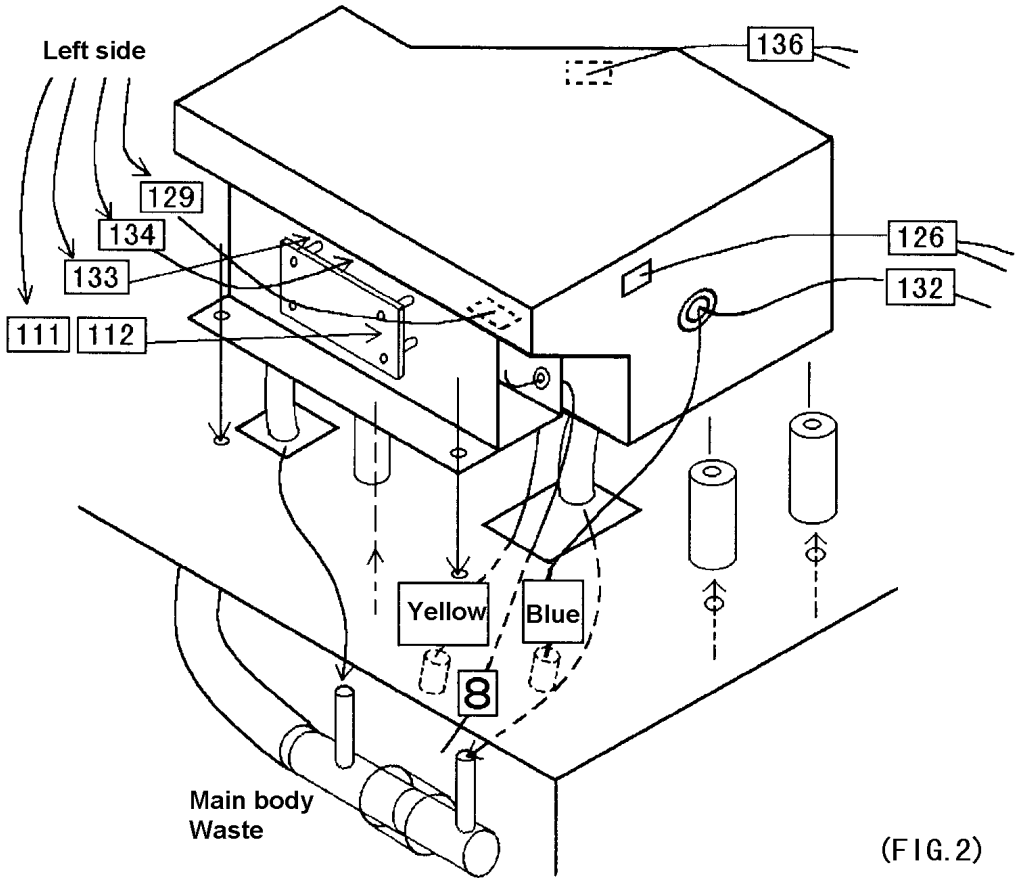


■ Setup

(1) Dismount Cover A/ B/ C/ D/ E/ F/ G (Fig. 1)
(2) Dismount poles under Cover B
Dismount cover plate, etc.
(3) Mount ISE main body at Cover B Position.
Dismount cover plates, etc.
(4) Connect to main body harness.
From Left side (Connector NO.111, 112, 129, 133, 134)
From Right side (Connector NO.126, 132, 136) See Fig. 2.
(5) Connect ISE waste tubes to main body and fix them by cable ties.
Leave tubes with mark [Blue], [Yellow], [8] from square hole.
(Fig.2)



(FIG.1)

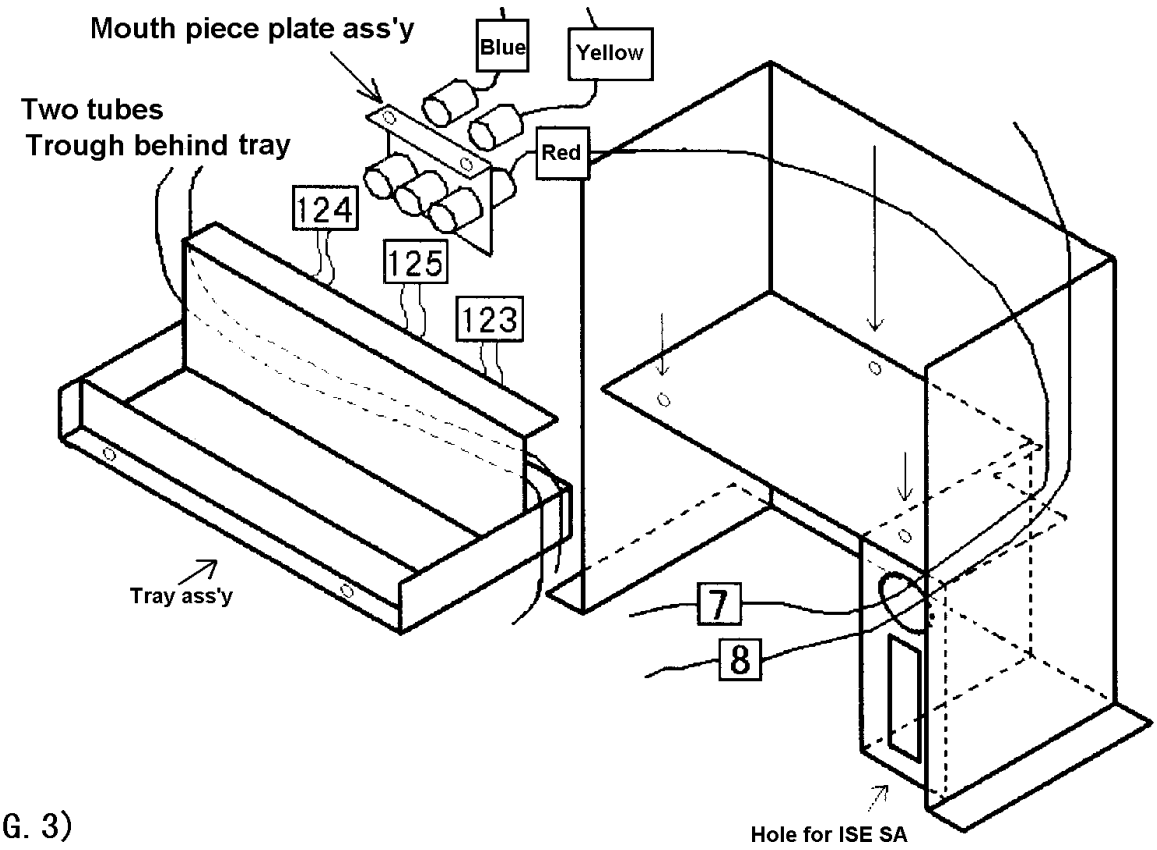


(FIG.2)

(6) Mount mouth piece plate ass'y under ISE main body.

(7) Connect Tubes [Yellow] and [Blue] to mouth piece plate ass'y from ISE main body. (Fig. 3)
(8) Pull Tube [8] from ISE main body through hole for ISE valve.
(9)
Connect [Red] tube (No.[7] – [Red]) to mouth piece plate ass'y, pull [7] from hole for ISE valve. The conncted two tubes should be through behind the tray ass'y which is mounted next step. (Fig.3)

(10) Fix tray ass'y and connect connector No. 123, 124, 125. (Fig. 3)

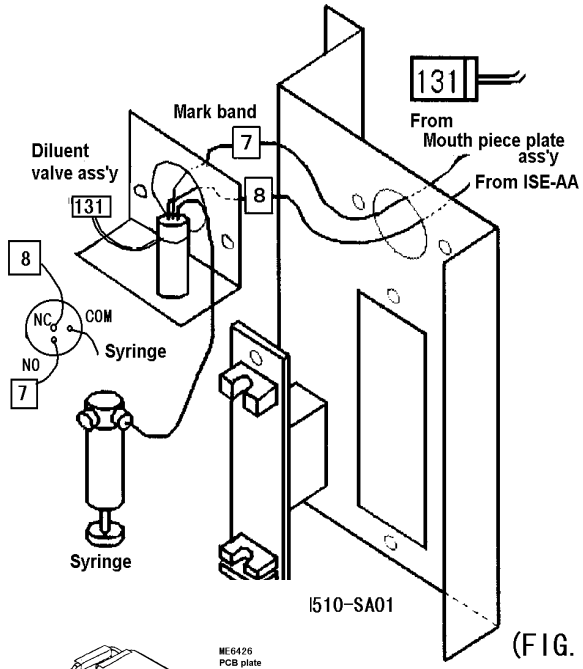


(FIG. 3)

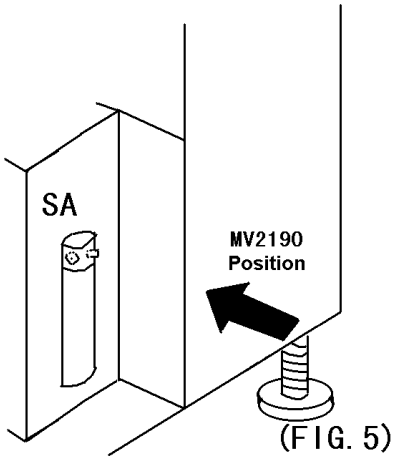
(11) Mount dispenser(M510-SA01). (Fig.4)

(12) Mount diluent valve ass'y.
connector No. 131(Fig.4)
(13) Connect tubes to valve.
[No.7] to NO, [No.8] to NC. (Fig.4)
(14) Set syringe and connect tube from valve to syringe. (Fig.4)
(15) Mount PCB (MV2190). (Fig.5)
Dismount PCB cover once, set connector No.101, 102, 103, 104, 105, hoch PCB plate and set screws.
Set PCB Cover. (Fig. 5, 6)

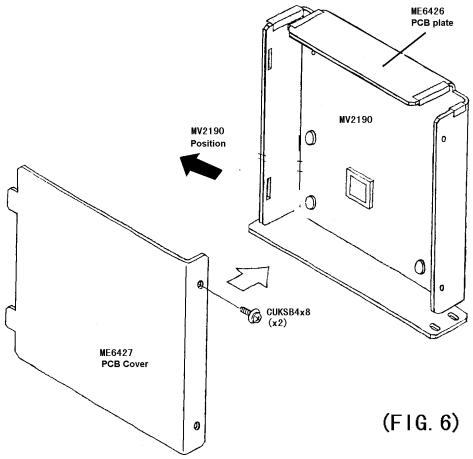
(16) Mount ISE power switch. "ON" must be upper. Connect Connector No. 100, 109 (Fig.7)
(17) Re-mount covers.



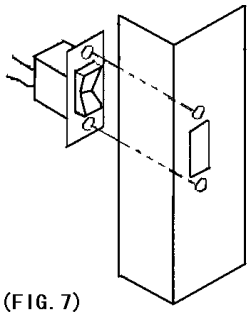
(FIG. 4)



(FIG. 5)



(FIG. 6)


(FIG. 7)

■ DIAG check

(1) Set ISE “YES” in System maintenance.
(2) Set ISE parameters in normal menu.
(3) Check sample probe positions and mix bar position.
Refer to part F.
(4) Set electrodes, reagents, tubes, etc and perform All prime.
(5) Perform calibration and check slope value.
(6) Check stability with 10 sample measure.

■ Measure test

Measure 40samples x 2 rounds and check the results with the following table.

	Normal range	Center	SD	CV
Na	135 – 147 mEq/l	141	0.85	0.6
K	3.3 – 4.8 mEq/l	4.1	0.08	2.0
Cl	98 – 108 mEq/l	103	0.72	0.7

Mean>Center: checked by CV, Mean<Center: checked by SD,

■ Solution for dispensing accuracy check (Orange G)

● For sample dispensing check (Orange S40) 1000ml

1) Add Orange G 1.0g into 500ml of distill water.
   Mix by magnetic stir until melted completely.
   Orange G: ($C_{16}H_{10}N_2Na_2O_7S_2 \cdot nH_2O$) Maker: Merch/ Sigma
2) Add Sodium Azide (NaN_3) 1.0g and Mix until melted completely
3) Add PEG·200 162g.
   PEG·200: Polyethylene Glycol ·200 ($H(OCH_2CH_2)nOH$)
4) Melt it and Fill more distill water to 1000ml.

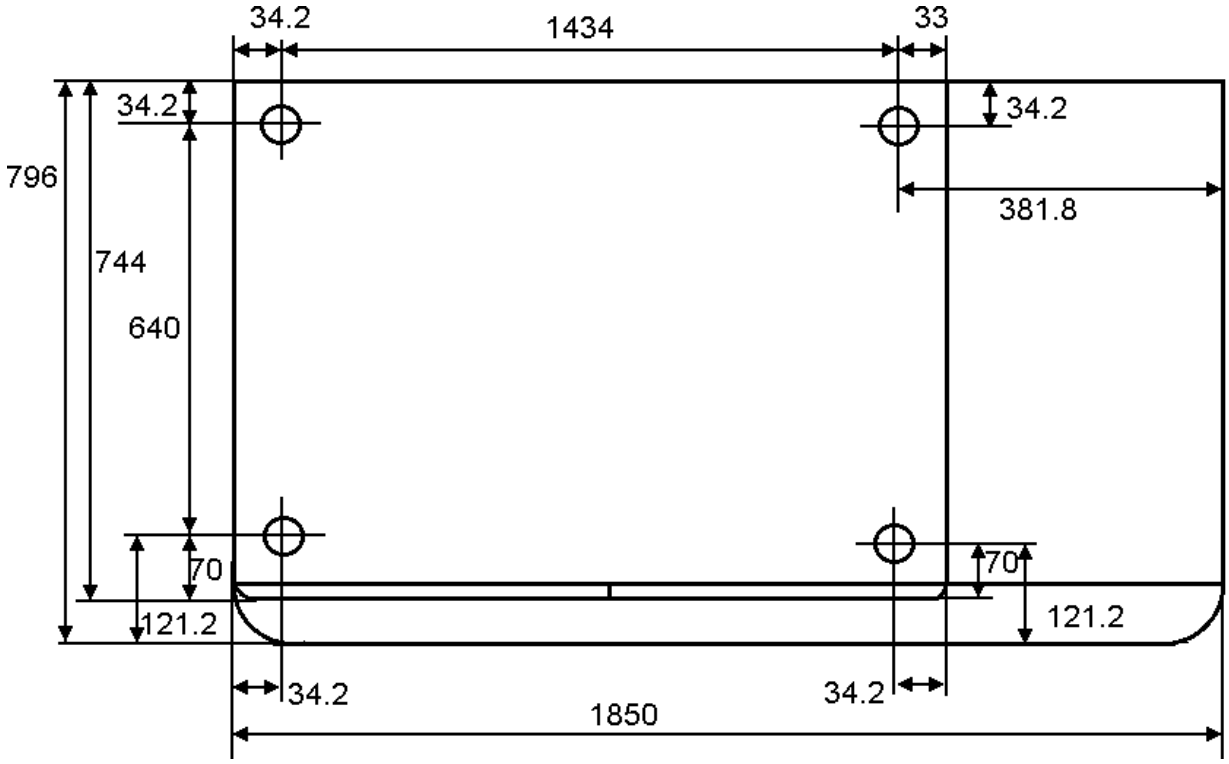
● For Reagent dispensing check (Orange R4) 1000ml

1) Add Orange G 0.097g into 500ml of distill water.
   Mix by magnetic stir until melted completely.
   Orange G: ($C_{16}H_{10}N_2Na_2O_7S_2 \cdot nH_2O$) Maker: Merch/ Sigma
2) Add Sodium Azide (NaN_3) 1.0g and Mix until melted completely
3) Add Surfactant Triton X 100(P8·P) 1ml.
   PEG·200: Polyethylene Glycol ·200 ($H(OCH_2CH_2)nOH$)
4) Melt it and Fill more distill water to 1000ml.

■ Parameter

Item	R150	R120	Sample 1.6 µl	Sample 2 µl	Sample 5 µl
Sample Volume	2	2	1.6	2	5
Sample diluent	0	0	0	0	0
R1 Volume	150	120	150	150	150
R1 diluent	0	0	0	0	0
R2 Volume	50	20	0	0	0
R2 diluent	0	0	0	0	0
wavelength (main)	480nm	480nm	480nm	480nm	480nm
wavelength (sub)	660nm	660nm	660nm	660nm	660nm
Analysis method	END 1	END 1	END 1	END 1	END 1
Reaction gradient	+	+	+	+	+
Measuring point 1 1^{ST}	0	0	0	0	0
Measuring point 1 Lst	27	27	27	27	27
CAL type	MB	MB	MB	MB	MB
Factor	10000	10000	10000	10000	10000
CV(%)	0.98	(0.98)	1.66	1.54	0.94

■ Jack position



■ Outline of Installation

● Installation Procedure

An outline of the installation procedure is shown below.
For more details about each step, refer to the next page.

● Step 1	Personal computer setup	Extension board setting BIOS setting
● Step 2	Installation of Windows NT	3floppy disks and 1 CD-ROM are required for NT install
● Step 3	Windows NT environment setup (Driver install)	Display/ Sound/ Multimedia/ Printer/ Serial port System start waiting time Task bar
● Step 4	AU640 Software installation	
● Step 5	Booting Up System Maintenance Setting/ Checking of each	
	End	

■ Step 1: Personal Computer Setup

Personal Computer and other DPR attachments are purchased in each business center or each country.
Refer to PC setup notice attached to each model and other parts descriptions.

● Setting Extension board

Install extension board to have COM3, COM4 and LPT2.
Follow the port address and IRQ settings mentioned in DPR spec requirement.
Refer to description for the extension board.

● BIOS setting

Check the following points in BIOS. Other settings should be defaults.)
Refer to PC setup notice attached to each model to know BIOS handling.

Drive A (1.44MB, 3.5inch)
Drive B (None)
Floppy 3mode support (Disable)
Boot Up NumLock Status (On)
On board Serial port1/ Serial port2/ Parallel port (refer to DPR spec requirement)
USB function (Disable)

■ Step 2: Installation of Windows NT

3 floppy disks and 1 CDROM are required for Windows NT setup.
Proceed the following steps for setup.

Step	Display	Operation
1. Start NT setup Disk #1		Insert Windows NT Workstation Setup Disk #1 and boot up the PC. (After app. 2 minutes)
2. Disk #2	Windows NT Setup Please insert the disk labeled Windows NT Workstation Setup Disk #2 into Drive A: *Press enter when ready	Insert Disk #2 ENTER (After app. 1 minute)
	Windows NT Workstation Setup Welcome to Setup The setup program ..... To learn more .....F1 To set up Windows NT now, press ENTER. To repair a damaged.....R To quit setup F3	ENTER
	Windows NT Workstation Setup Setup automatically detects floppy disk..... For this reason,..... To continue , press ENTER. To skip mass storage device detection, ..S	ENTER
3. Disk 3	Windows NT Workstation Setup Please insert the disk labeled Windows NT Workstation Setup Disk #3 into Drive A: *Press enter when ready	Insert DISK #3 ENTER (After app. 2 minutes)
	Windows NT Workstation Setup Setup has recognized ..... IDE CDROM (...)..... To specify additional SCSI.....S If you do not have any device support disk ..... ENTER	ENTER (After app. 1 minute)
4. CD-ROM	Windows NT Workstation Setup Please insert the disk labeled Windows NT Workstation CD-ROM into your CD-ROM Drive *Press enter when ready	Insert CD-ROM ENTER

Step	Display	Operation
5. Licensing Agreement	Windows NT Licensing Agreement Microsoft Windows NT .Workstation Licenses 1 END-USER..... . .	Page down F8 (I agree)
6. System status	Windows NT Workstation Setup Setup has determined ..... Computer: Standard PC Display: Keyboard: Keyboard layout: Pointing device: No Changes If you want to change..... When all the items.....ENTER	 ENTER Unformatted (N: New setup)
7. Format HD	Windows NT Workstation Setup The list below ..... To install Windows NT on .....ENTER To create a partition.....C To delete the highlighted partition.....D 3099MB disk 0 at ID 0 on bus 0 on atapi C: NTFS 1910MB(1630MBFree) unpartitioned space 1189MB	 ENTER
8. NTFS	Windows NT Workstation Setup Setup will install Windows NT on partition..... C: NTFS 1910MB(1630MBFree) on 3099MB disk 0 at ID 0 on bus 0 on atapi Select the type of file system ..... Format partition using the FAT file system Format partition using the NTFS file system Leave the current file system intact(no change)	Select NTFS by using up/ down arrow . Do not select FAT. ENTER
9.	Windows NT Workstation Setup WARNING: Formatting this drive..... C: NTFS 1910MB(1630MBFree) on 3099MB disk 0 at ID 0 on bus 0 on atapi To format the drive , press F. To select a different .....ESC	 (F) New format
	Windows NT Workstation Setup Please wait while ..... C: NTFS 1910MB(1630MBFree) on 3099MB disk 0 at ID 0 on bus 0 on atapi Setup is formatting... 70% **********	(Wait for a few minutes)

Step	Display	Operation
10. Folder	Windows NT Workstation Setup Setup installs Windows NT..... \ WINNT To change the suggested To format the drive , press F. To select a different .....ESC	ENTER
11. Copy files	Windows NT Workstation Setup Setup will now examine your hard disk(s)..... To allow setup to perform.....ENTER To skip the exhaustive.....ESC	ENTER
	Windows NT Workstation Setup Please wait while..... Setup is copying files... 70% ********** _____	(Wait for a few minutes)
12. Reboot	Windows NT Workstation Setup This portion of setup has completed successfully. If there is a floppy disk inserted in drive A:, remove it. .....CD-ROM.....	Remove floppy disk and CD-ROM ENTER (Wait for a few minutes)
13. CD-ROM	Insert Disk Please insert the compact Disc..... OK Cancel	Insert CD-ROM “Windows NT workstation” into CD-ROM drive (D:). Click OK by pointing device.
14. Gathering information of computer.	Windows NT Workstation Setup Welcome to the Windows NT setup Wizard..... - **1) Gathering information about your computer** 2) Installing Windows NT Networking 3) Finishing Setup	Click Next
15. Setup Option	Windows NT Workstation Setup Setup Option Typical Portable Compact Custom	Select Typical Click Next
16. Name and Organization	Windows NT Workstation Setup Name and Organization	(e.g.) Name: TSD Organization: Olympus Click Next
17. Registration	Windows NT Workstation Setup Registration Please locate your 10 digit “CD key”..... CD Key	Type in CD Key xxx- xxxxxxx Click Next

Step	Display	Operation
18. Computer Name	Windows NT Workstation Setup Computer Name Windows NT .....15 character or less.....	(e.g.) AU640 Click Next
19. Administrator Account	Windows NT Workstation Setup Administrator Account Please enter a password of 14 characters or less.....	Do not enter anything. Click Next
20. Emergency Repair Disk	Windows NT Workstation Setup Emergency Repair Disk Yes, No,	Select Yes. Click Next
21. Windows NT Components	Windows NT Workstation Setup Windows NT Components Install the most common.....(recommended) Show me the list.....	Select (recommended) Click Next
22. Installing Windows NT Networking	Windows NT Workstation Setup Windows NT Setup 1) Gathering information about your computer **- 2) Installing Windows NT Networking** 3) Finishing Setup	 Click Next
23. Network	Windows NT Workstation Setup Windows NT needs to know .....network Do not connect .....network..... This computer will participate on a network.	Select Do not connect Click Next
24. Finishing Setup	Windows NT Workstation Setup Windows NT Setup 1) Gathering information about your computer 2) Installing Windows NT Networking **- 3) Finishing Setup**	 Click Finish
25. Date/ Time Properties	Date/ Time Properties Date &Time/ Time zone	Set correct time . Set time zone with your area. Click Close
26. Display Properties	Display Properties Detected Display	Click OK Escape from the Display properties window by click Cancel. (Wait for a few minutes)

Step	Display	Operation
27. Emergency Repair Disk	Setup Label a floppy disk “Emergency Repair Disk”..... OK Cancel	Set a FD into drive A:. Click OK (Wait for a few minutes)
28. Restart Computer	Windows NT Setup Windows NT 4.00 has been installed successfully. Remove disks from drivers and compact discs from CD-ROM drives and choose Restart Computer. ---------- I I I * I I I ---------- Restart Computer	Remove FD and CD-ROM from drives. Click Restart Computer (Wait for a few minutes)
29. Begin Log on	Begin Log on Press Ctrl + Alt + Delete to log on	Press Ctrl + Alt + Delete .
30. Log on Information	Log on Information Enter a user name and password that is valid for this system User name Administrator Password OK Cancel Help Shut down	Do not enter anything. Click OK.
	Welcome	Click Close.
	Desktop	Close all open windows to get Windows NT desktop display.

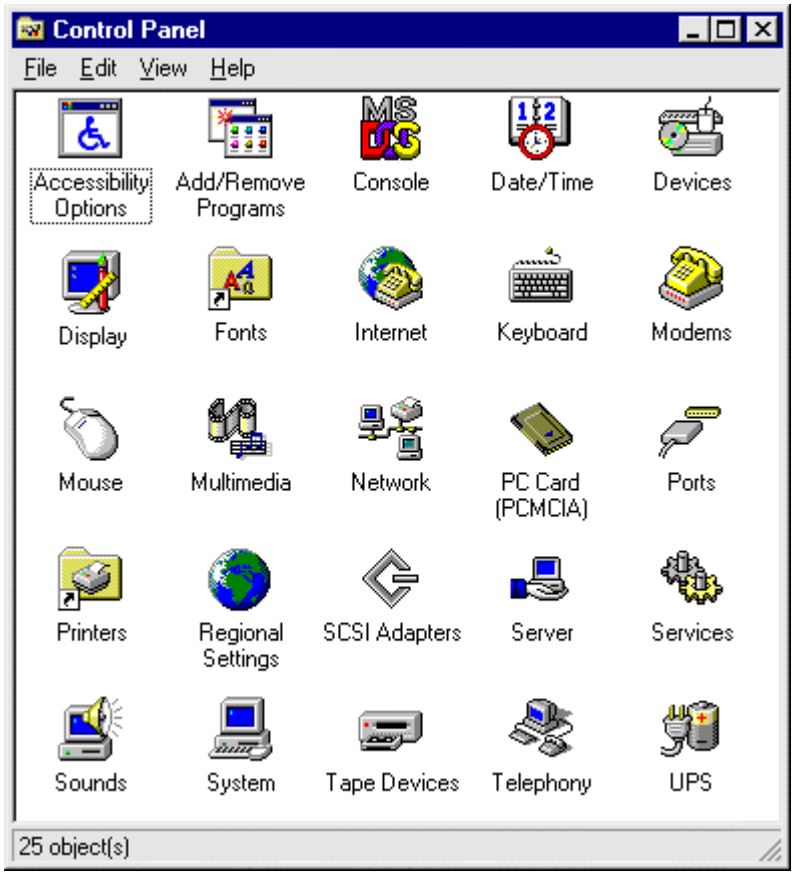
Start setting of Windows NT Environment. (Refer to the next chapter.)

■ Step 3: Windows NT Environment Setup

● Install the appropriate drivers for use with the AU640.

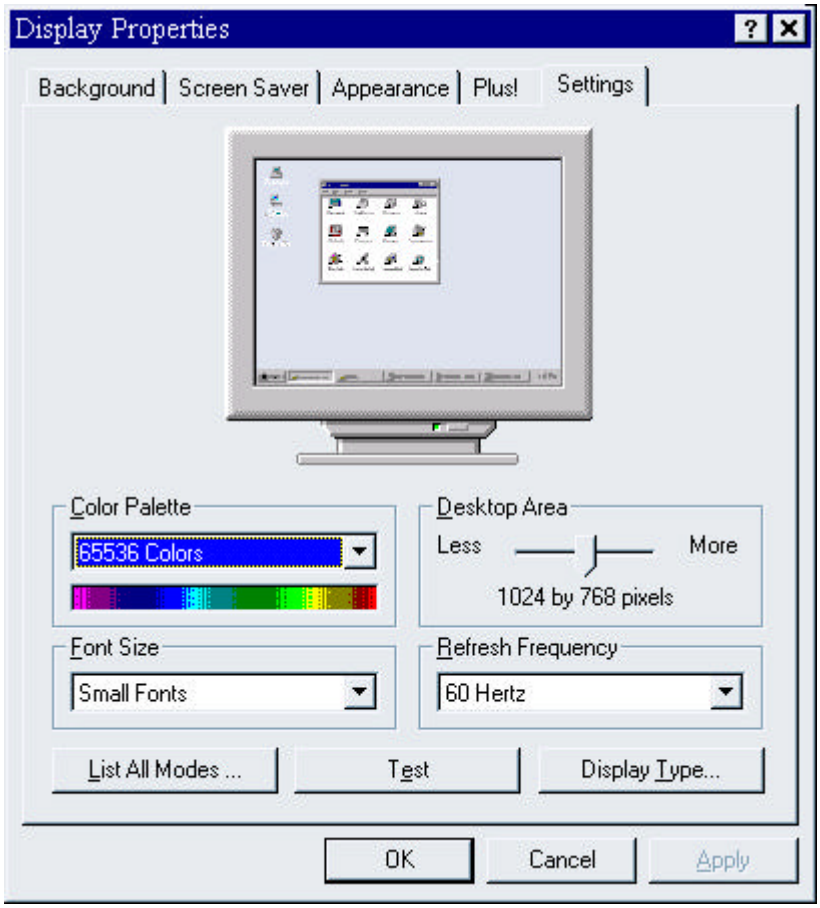
Type of driver	Drivers	Remarks
Display driver	e.g. - ATI Technology 3D RAGE II - ATI Technologies Compatible Graphics Adapter	
Sound driver	e.g. - Creative Labs Sound Bluster 1.X Pro 16 - MM PRO 16V-A AMP	
Printer driver 1	e.g. - NEC P/62 - Panasonic KXP-3123 - Epson VP-1100	
Printer driver 2	e.g. - NEC P/62 - Panasonic KXP-3123 - Epson VP-1100	In case required.
Modem driver		In case required.
T ouch panel driver		In case required.

✶ Install needed drivers with the Windows control panel. Select the driver from the table in windows NT or use disks for each driver.

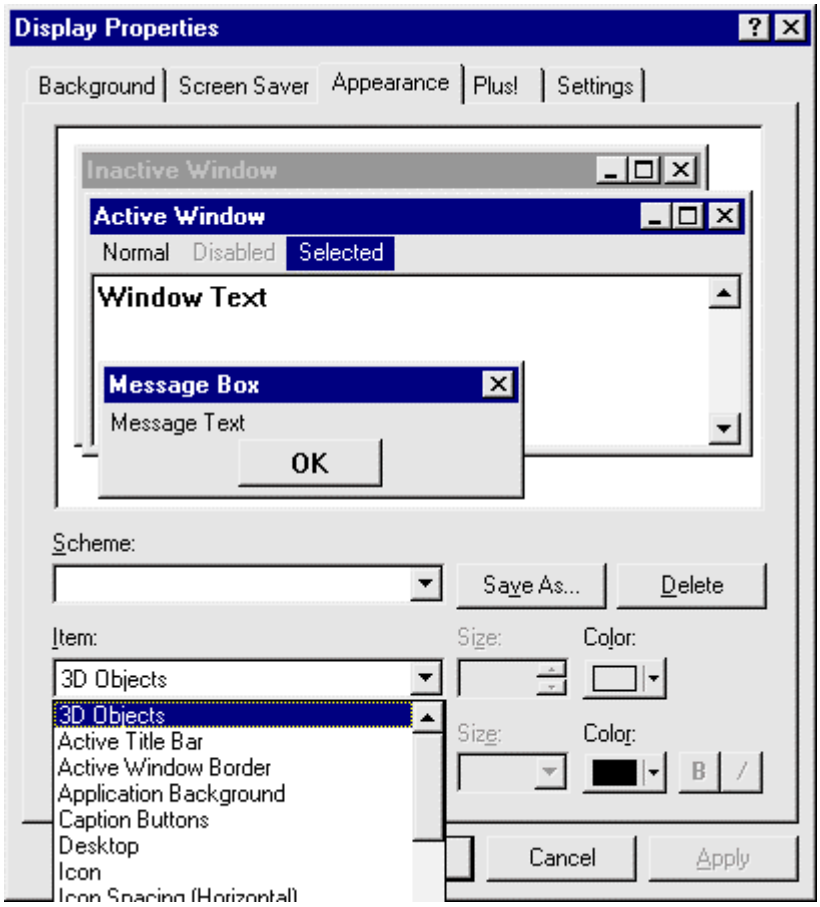


● Display Drivers

1) Select the screen control panel and click Setting tab.
2) Click “ Display Type”.
3) Select "change", then install the driver from the table in Windows NT or the driver disk.
4) Reboot PC.
5) Setup the following items by " Display" icon.
   65536 colors
   1024x768 pixels
   60 Hz



5) Click " Appearance " tab and set each item as the following table.



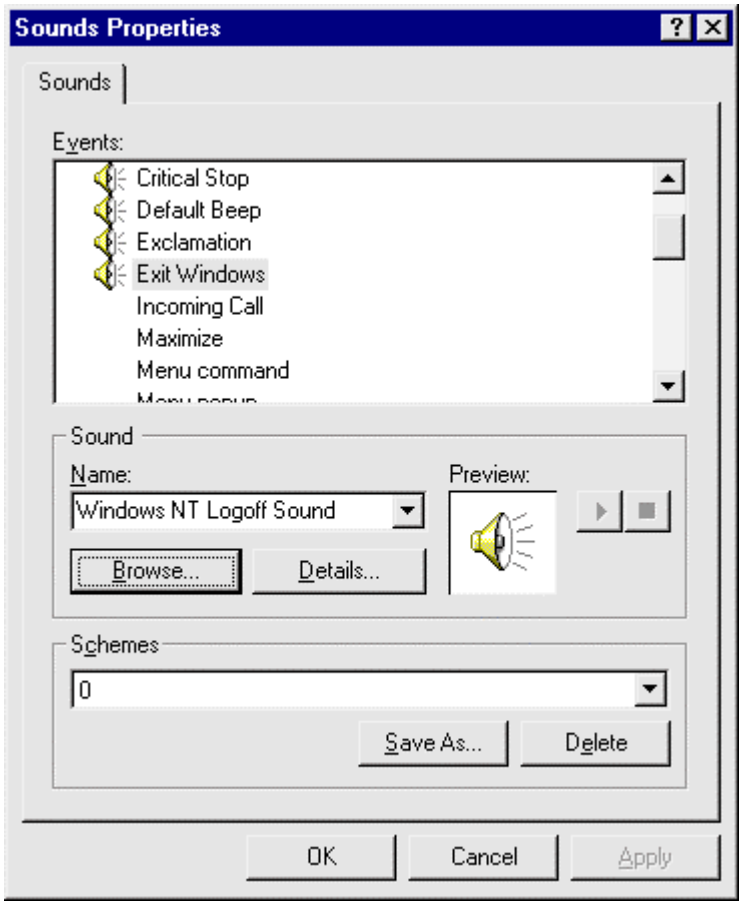
Item	Size	Color			Font	Size	Color		
		R	G	B			R	G	B
3D Object	-	162	183	200	-	-	0	0	0
Active title	19	0	0	128	Times New Roman	11	254	254	254
Active window border	1	162	183	200	-	-	-	-	-
Application back ground	-	89	123	151	-	-	-	-	-
Caption Buttons	19	-	-	-	-	-	-	-	-
Desktop	-	162	183	200	-	-	-	-	-
ICON	32	-	-	-	Times New Roman	8	-	-	-
ICON Spacing(H)	43	-	-	-	-	-	-	-	-
ICON Spacing(V)	43	-	-	-	-	-	-	-	-
Inactive title bar	19	89	123	151	Times New Roman	11	128	128	128
Inactive window border	1	162	183	200	-	-	-	-	-
Menu	26	162	183	200	Times New Roman	14	0	0	0
Message box	-	-	-	-	Times New Roman	14	0	0	0
Pallet title	16	-	-	-	Times New Roman	8	-	-	-
Scroll bar	16	-	-	-	-	-	-	-	-
Selected Items	26	0	0	255	Times New Roman	14	254	254	254
Tool tip	-	255	255	255	Times New Roman	8	0	0	0
Window	-	255	255	255	-	-	0	0	0

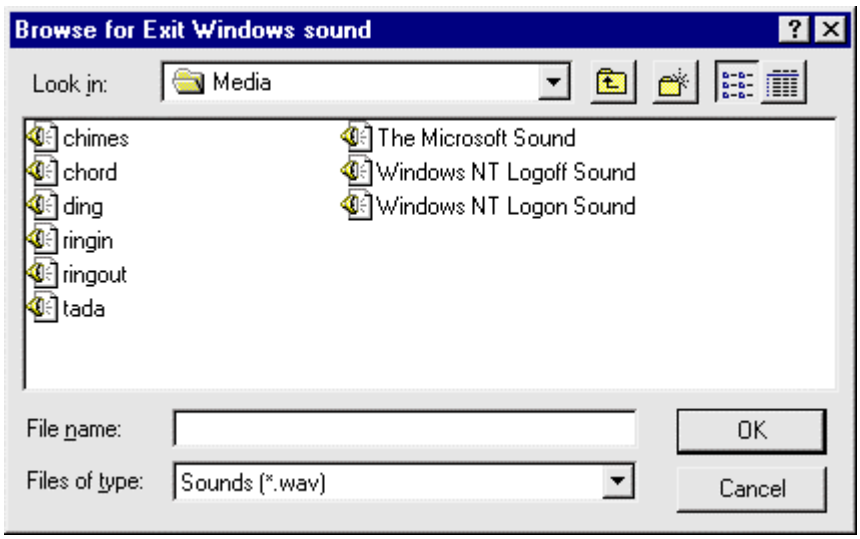
6) Do not set any screen saver because AU640 might hang up.
7) Other settings for Display are not required for AU640.

● Sound Drivers

1) Select the sound control panel, and set up each sound name for the scene in which the beep is to sound according to the following table.

	Scenes to be beeped	Names of sound	Remarks
Windows	Asterisk	None	
	Close program	None	
	Critical stop	Chord	
	Default Beep	Ding	
	Exclamation	Chord	
	Exit Windows	Windows NT Log-off sound	
	Incoming Call	None	
	Maximize	None	
	Menu command	None	
	Menu pop up	None	
	Minimize	None	
	Open program	None	
	Outgoing Call	None	
	Program error	Chord	
	Question	Chord	
	Restore Down	None	
	Restore Up	None	
	Start Windows	Windows NT Log-on sound	
Windows Explore	Empty Recycle Bin	None	
Media Player	Close Program	None	
	Open program	None	
Sound Recorder	Close program	None	
	Open program	None	

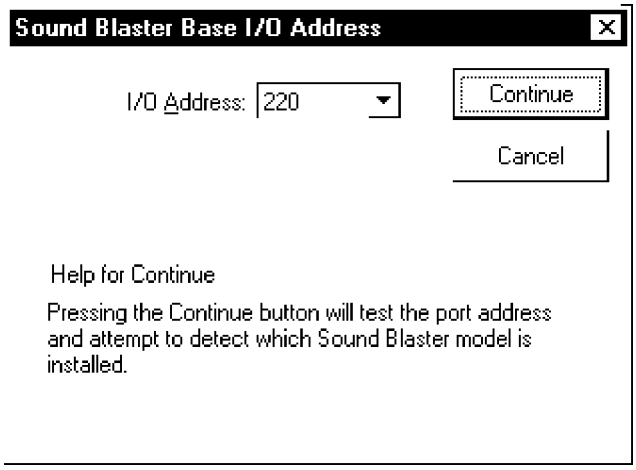

Sounds Properties
Sounds
Events:
Critical Stop
Default Beep
Exclamation
Exit Windows
Incoming Call
Maximize
Menu command
Sound
Name:
Windows NT Logoff Sound
Preview:
Browse...
Details...
Schemes
0
Save As...
Delete
OK
Cancel
Apply

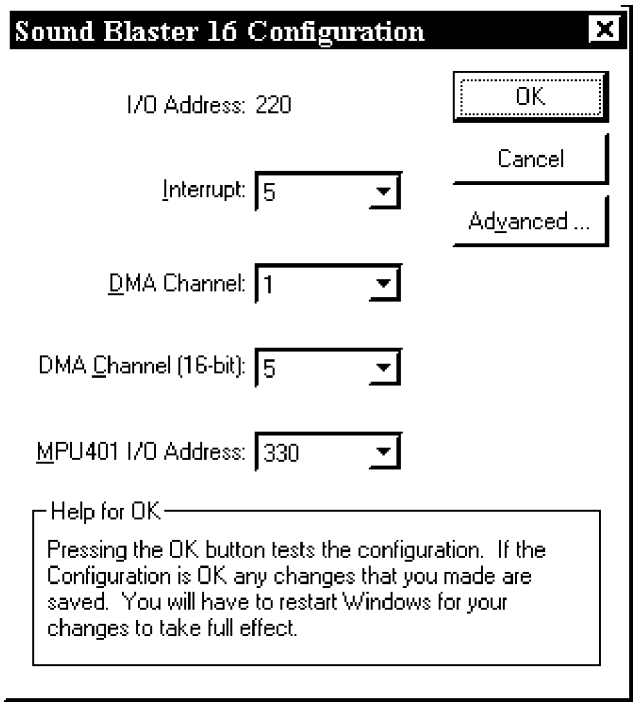

Browse for Exit Windows sound
Look in:
Media
chimes
chord
ding
ringin
ringout
tada
The Microsoft Sound
Windows NT Logoff Sound
Windows NT Logon Sound
File name:
Files of type:
Sounds (*.wav)
OK
Cancel

● Multimedia

1) Select the multimedia control panel and set up the following driver with "device".
2) Select “Audio Devices” and click "Add", then select the appropriate driver from the list and click “OK” or use disk.

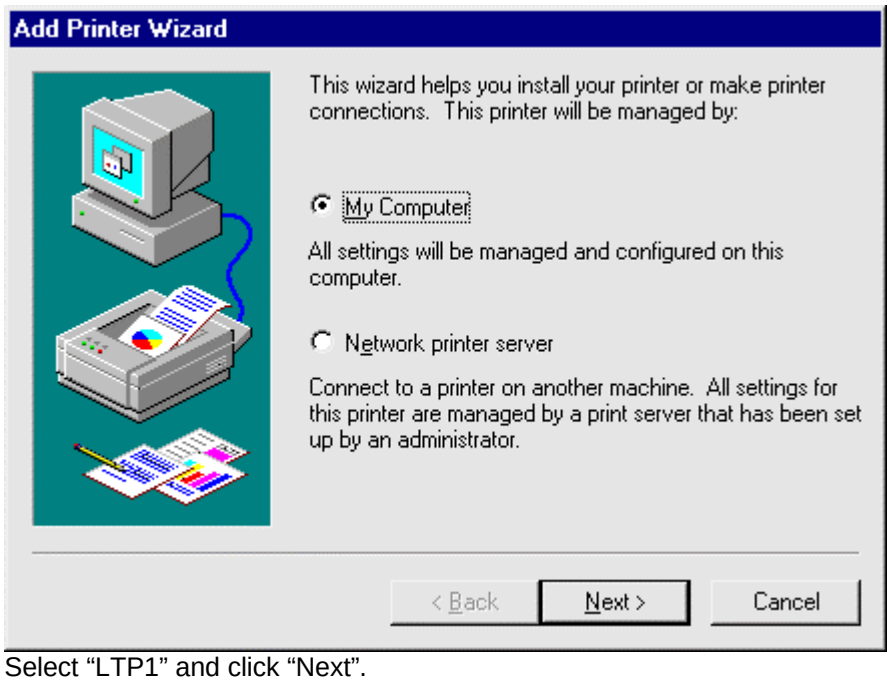
3) Set detailed figures.
e.g. Creative Labs Sound Bluster 1.X Pro16


Sound Blaster Base I/O Address
I/O Address: 220
Continue
Cancel
Help for Continue
Pressing the Continue button will test the port address and attempt to detect which Sound Blaster model is installed.

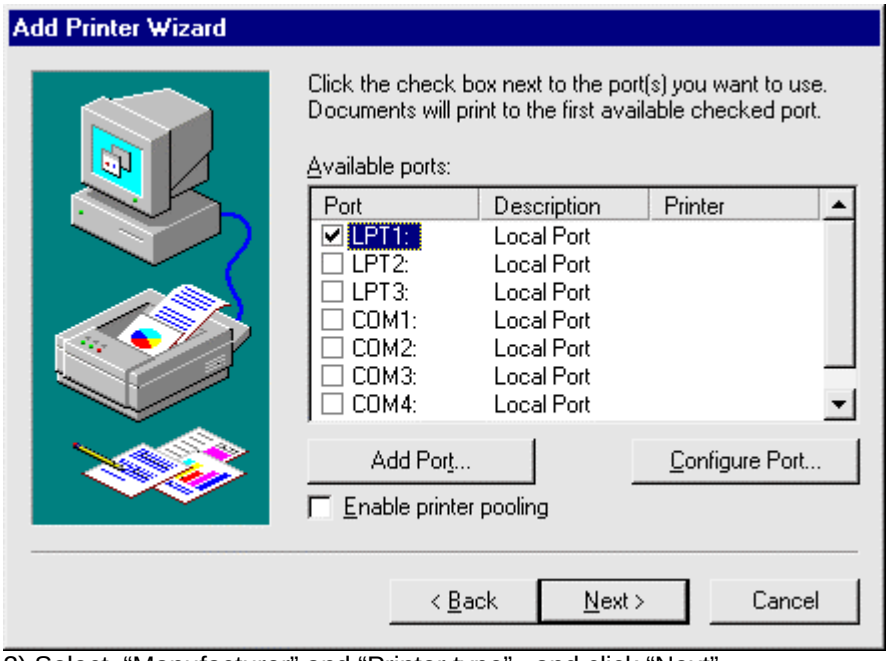

Sound Blaster 16 Configuration
I/O Address: 220
OK
Cancel
Interrupt: 5
Advanced ...
DMA Channel: 1
DMA Channel (16-bit): 5
MPU401 I/O Address: 330
Help for OK
Pressing the OK button tests the configuration. If the Configuration is OK any changes that you made are saved. You will have to restart Windows for your changes to take full effect.

● Printer Driver

1) Select the printer control panel, select "Add printer" from the menu.
2) Select “My Computer” and click “Next”.


Add Printer Wizard
This wizard helps you install your printer or make printer connections. This printer will be managed by:
My Computer
All settings will be managed and configured on this computer.
Network printer server
Connect to a printer on another machine. All settings for this printer are managed by a print server that has been set up by an administrator.
< Back
Next >
Cancel

Select “LTP1” and click “Next”.

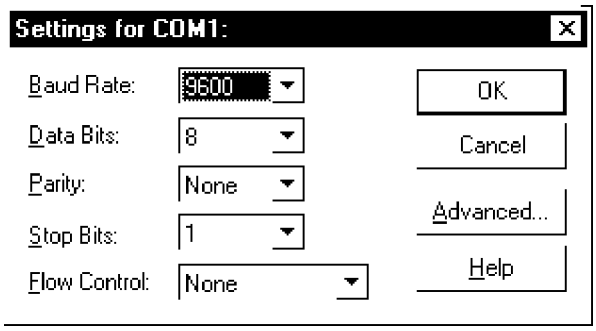


3) Select “Manufacturer” and “Printer type” , and click “Next”.
   If the printer type is not in the list, use driver disk.
4) Click “Next” if the selected printer is correct.
5) Select “Not Shared” and click “Next”.
6) Select “Yes(recommended)” and click “Finish”.
7) Make sure of the printout. If the printout is correct, click “Yes”.

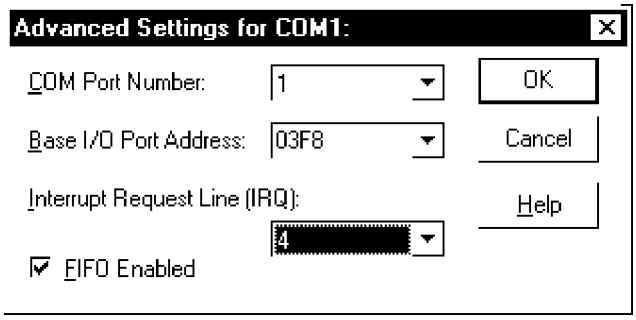
(Note) When there is an option printer, add the appropriate printer driver to LTP2.
Port Address/ IRQ (LPT1: 0x378-0x37F/ 7, LPT2: 0x278-0x27F/ 7)

● Serial ports

1) Select the serial port control panel, and set up "COM1" and" "COM2" as follows.
2) Add COM 3, 4 and 5 if options are required.



2) Click “Advanced...” and set Base I/O port Address and IRQ.



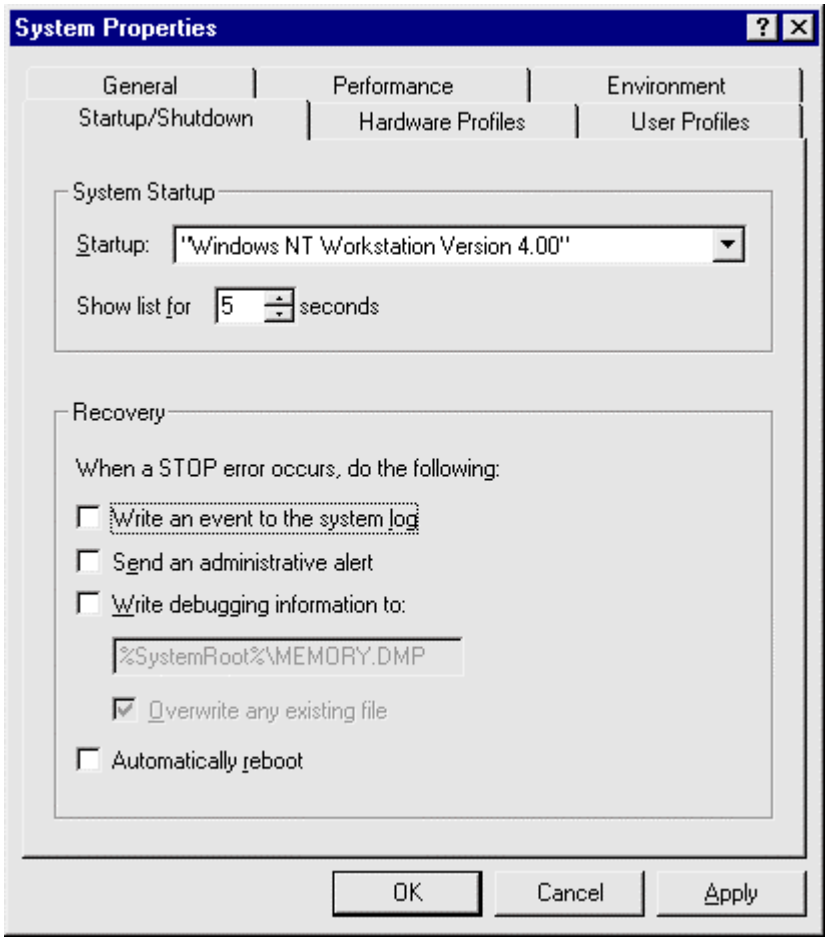
Refer to DPR specification requirement.

	Standard/ Option	Item	COM port number	Base I/O port Address	IRQ
COM1	Standard	DPR->ANL	1	3F8	4
COM2	Standard	ANL->DPR	2	2F8	3
COM3	Option	Online	3	3E8	9
COM4	Option	Modem (OAI) US Robotics	4	2E8	10 (OAI) 5 (ODH, Asia) 7
COM5	Option	Touch panel (OAI) No setting	5	2A0	11

The above table is in case full option.
Port Address “2A0” is not in the list. Type in “2A0” in adding COM5.
The above address and IRQ are recommendations. Another setting is also allowed. The function of COM1 ,COM2 and COM3 are fixed. You must set COM1 for DPR->ANL, COM2 for ANL->DPR and COM3 for Online. Others are flexible.

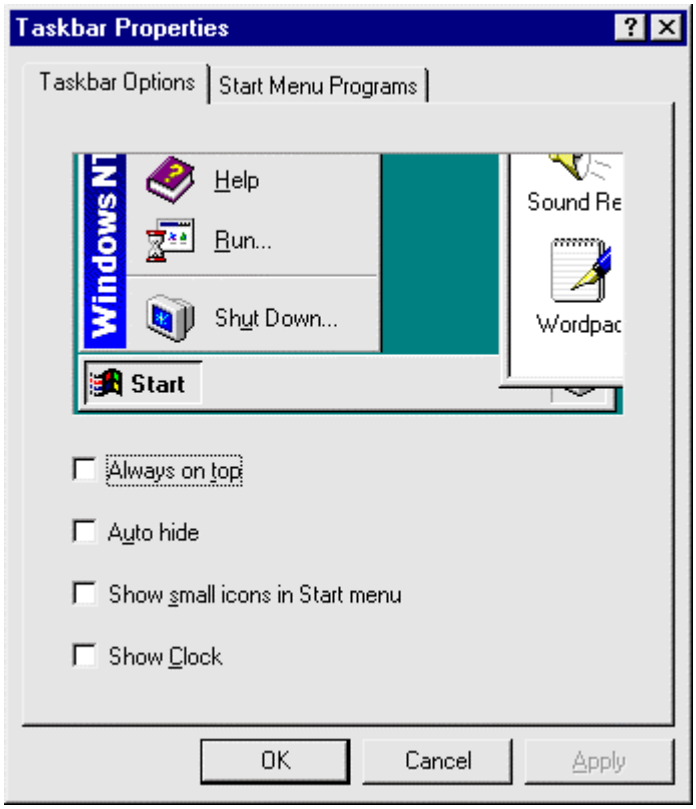
- **Systwm start waiting time**

5 second is recommended.



● Task bar

No setting to Task bar Options.



■ AU640 Software Installation

● AU640 software installation

1) Run NT-Explorer of Windows NT.
2) Insert AU640 Program CD-ROM into the CD-ROM drive.
3) Open the CD-ROM, then run "setup. exe" with Explorer.
4) The installer for the AU640 software will be loaded. You will be queried as to the type of installation.

For normal installation, select "typical".

For a software update, use "Compact" or "Custom".

✶ If "Custom" is selected, information about the following will be asked.

- Help related files
- DLL (includes those for DPR Program, System Maintenance, and OCX)
- DPR program (includes EXE, Customized DLL, and INI files)
- ANL program
- ISE program
- DATA files
- OTHER DATA FILE
- MESSAGE
- DAO setup kit
- System Maintenance program
- Start up program
- ACROBAT READER (Setup program)

5) Follow the messages on the screen and once you have finished, re-boot the PC.

● Other software installation (PC anywhere, etc)

Other software is installed with setup procedure of each software.

● Display Setting

On Ver.4.2 and after, Display and Sound setting can be done by “Regsetting.exe”.

1) Setup the AU640 program.
2) Double click the file “ c:/ AU640/ Systemmaintenance/ regsetting.exe” from explorer.
3) Execute the regsetting by pressing “Change” . Press “OK” and finish.
4) Find the “OLYMPUS AU Series Standard” from Control panel – Display property – Appearance - Scheme.
5) Press “Apply”, then the display setting is done. Finish by “OK “sw.

● Sound Setting

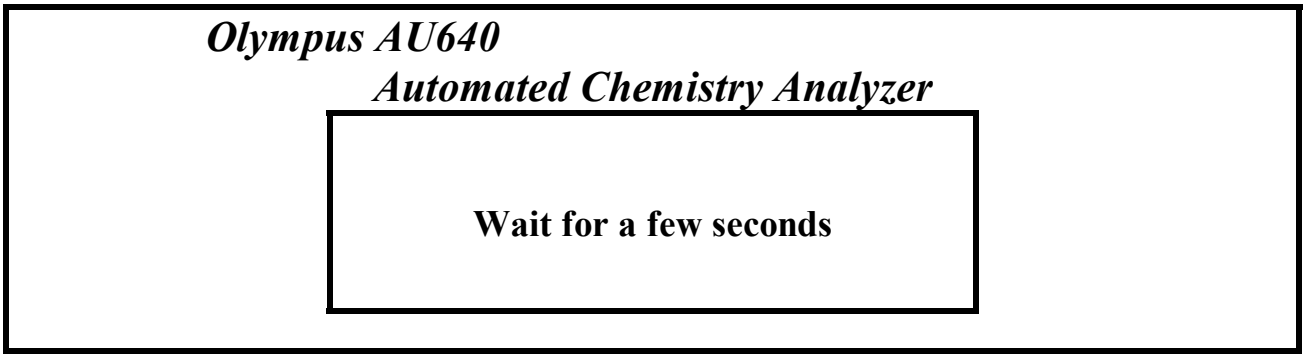
1) Open Control panel – sound – Schemes.
2) Input “Olympus” as name of setting.
3) Finish with “OK”.

● Printer tool

See I12.

■ Using System Maintenance to Set Up Each Parameter

● After re-booting the PC, the start up program installed in the start up folder will be activated, then, the following screen will be displayed at DPR boot up.

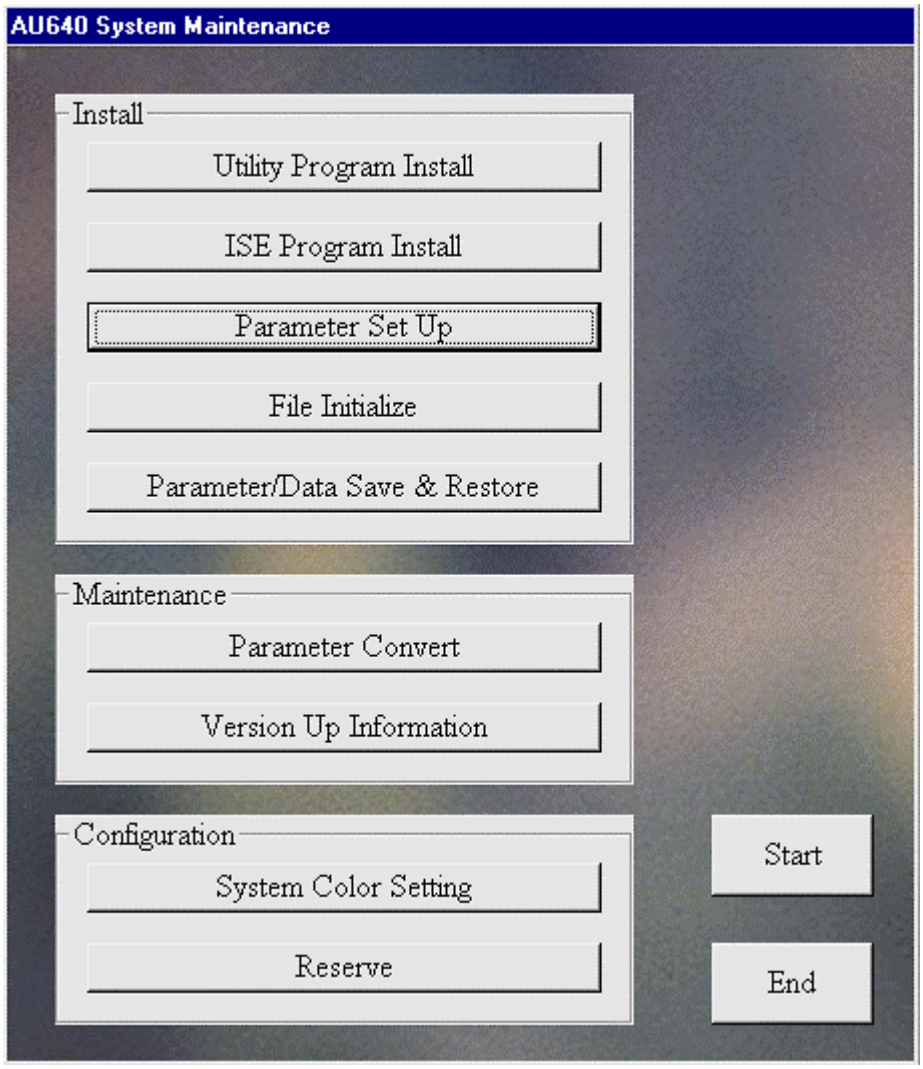


● After this screen is displayed, the rest of time to boot up the DPR will be displayed, then when the rest of the time came to zero second, the DPR program will be boot up. During this process, the following actions are performed for each event.

"S" key input:	DPR program boot up
"Q" key input:	Return to Windows
"System Maintenance" button clicking:	System Maintenance boot up
"Windows" button clicking:	Return to Windows

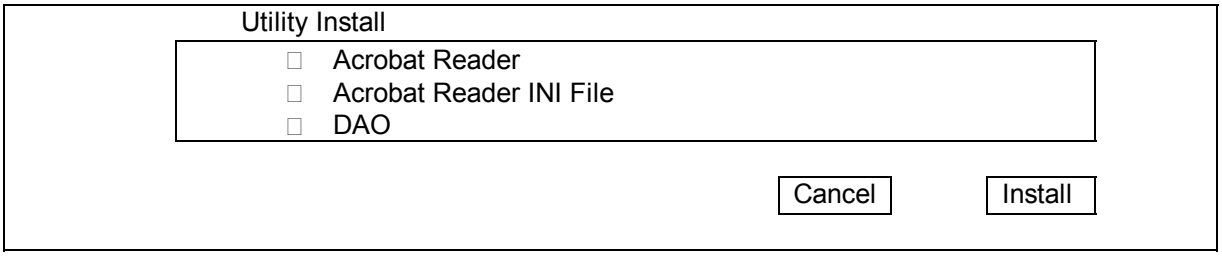
● System Maintenance will boot up if "System Maintenance" is clicked.

■ System Maintenance Main Menu



Menus	General Contents	Page
Utility Program Install	Installation of PC Anywhere, Acrobat reader, and DAO	
ISE Program Install	Writing an ISE program in the Flash ROM	
Parameter Set Up	Setting each parameter	
File Initialize	Initialization of data files and parameter files	
Parameter/Data Save and Restore	Saving and restoring parameters and data	
Parameter Convert	If software is updated and if parameters are not compatible, this makes the old parameters compatible.	
Version Upgrade Information	Refer to the appropriate version of the software for information. The same information is given in "Program History Table B".	
System Color setting	Only for development	
Reserve	Reserve	

- Installation of Utility Programs and Database Objects
  Confirm what is to be installed, and press “Install”.

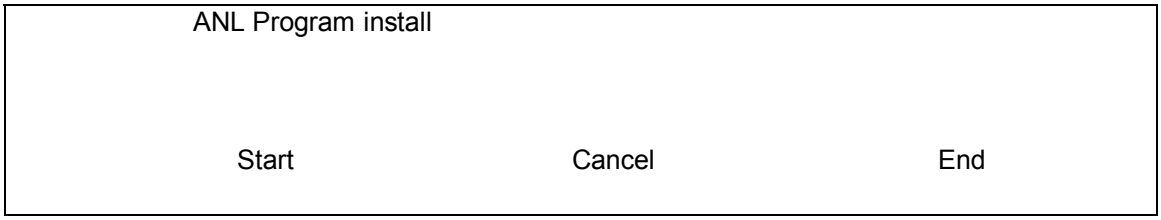


Items	General Contents
Acrobat Reader	Required to view the contents of the Instruction Manual. Software for reading PDF files.
Acrobat Reader INI File	Acrobat Reader INI File decide the size of on-line help.
DAO	A database engine. This software is essential for running the AU400 software.

Execute each installation one by one. 3 items must be installed.
Acrobat Reader must be installed before Acrobat Reader INI File
DAO must be installed on your computer otherwise some errors will be generated.

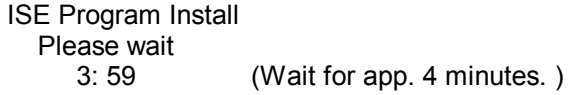
■ ISE Program Installation

This program should be transferred from the DPR and into the ISE FLASH ROM.
If the ISE program has been changed, it must be installed again.



(Procedure of ISE program install)

1) Power off (by EM stop).
2) Set “on “ digit 3 of DIP sw on ISE control PCB.
3) Power on and open system maintenance.
4) Execute ISE program loading with click start.
   After 30sec the following timer is displayed.



5) Make sure of the results as the right table.
6) Power off (by EM stop).
7) Set “off “ digit 3 of DIP sw on ISE control PCB.
8) Power on.

(Display in case normal end)

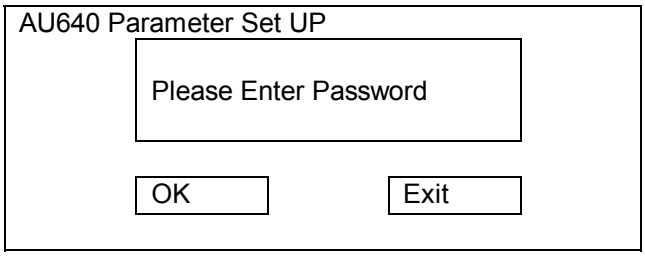
```
SIO2 Initialize
DSR ON
Check text send
Text loaded in send buffer
.
.
.
Status text receive
** Normal end **
** Status Information **
***End***
Text loaded in send buffer
DES line changed
DSR line changed
```

Parameter Setting (Ver 2.1)

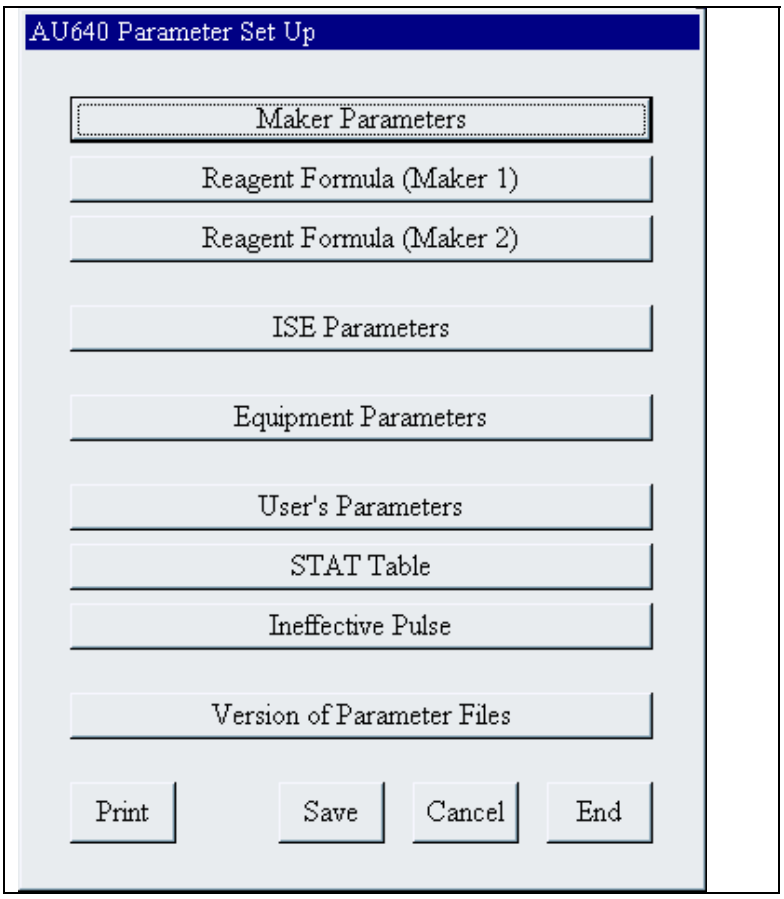
If the parameters are changed, the AU400 INI files (text files) will be changed.
There are four INI files. Each INI file contains parameter setting values and parameters that will be displayed in the System Maintenance menu.

- Manufacturer Setting Conditions: MakerSetting.ini
- ISE Manufacturer Setting Conditions (fixed): IseMakerSetting.ini
- Manufacturer Setting Conditions for user: UserMakersetting.ini
- Machine Oriented Conditions: MachineOriented.ini

If "Parameter Set Up" is clicked, a password will be requested.
Enter "SBM" to continue. A menu to set each parameter will be displayed.



Sub-Menu



Manufacturer Parameters	• Sets the Bar code QC, Repeat Run, etc.
Reagent Formula (Maker 1)	• Sets the factor for the remainder calculation in the reagent bottle.
Reagent Formula (Maker 2)	• Sets the factor for the remainder calculation in the reagent bottle.
ISE Parameters	• Sets all the factors for the ISE.
Equipment Parameters	• Sets the corrected pulse for FA and FD rotation.
User's Parameters	• Sets the items for each ACAL, QC, and RB sample type. • Sets the down stroke for the FA and FD. • Stops the alarm. • Stops the alarm of the ISE and the slope check.
STAT Table	• Sets the sample type of the STAT table in each position.
Ineffective Pulse	• Sets the invalid pulse of the STAT and each rack of the sample probe.
Version of Parameter File	• Displays the versions of the various parameter files.
Print	• Prints out the parameters.
Save	• Saves the parameters. A dialogue will be displayed querying whether the parameters should be saved.
Cancel	• Cancels the parameter setting.
End	• The screen will display a dialogue querying whether the parameters should be saved. End of the parameter set up menu.

- Maker Parameters

Bar code QC	Repeat run	etc	Requisition Process	OLA4000

□ Use Rili-Back (Only German Market)

Default "NO".

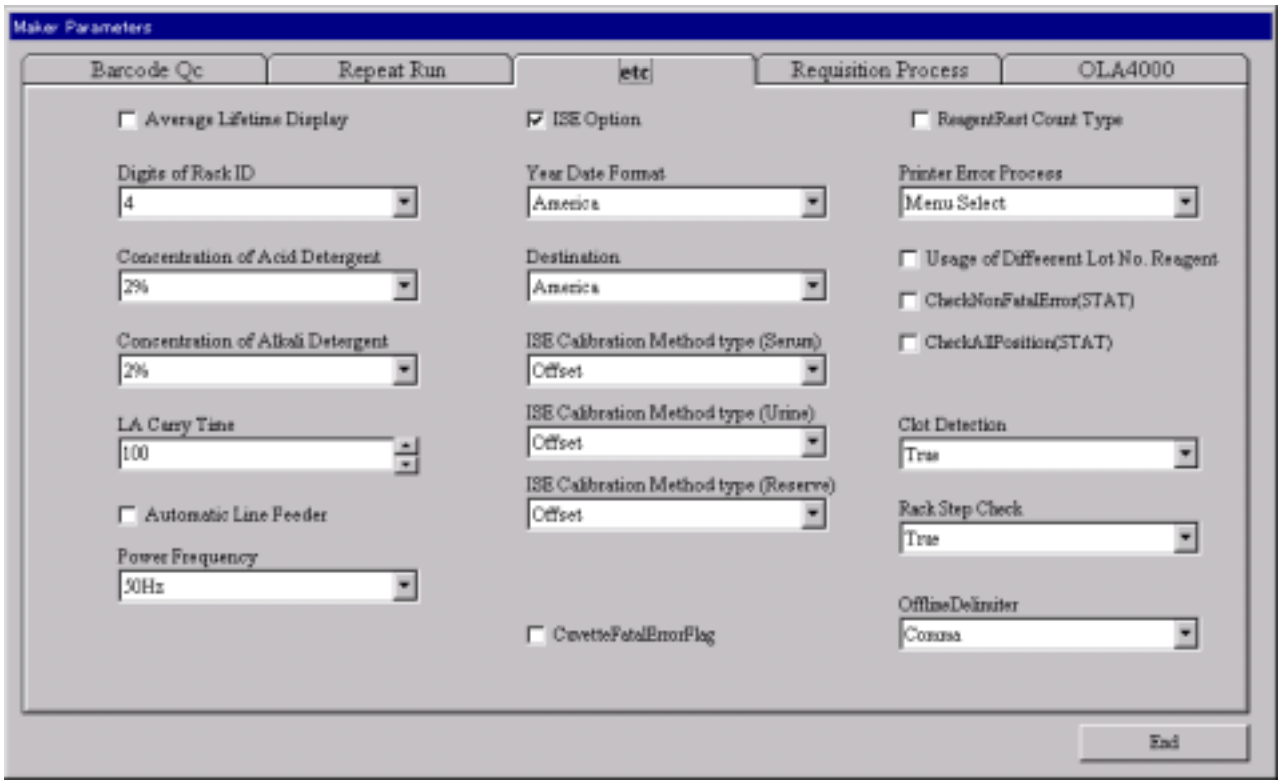
Bar code QC	Repeat run	etc	Requisition Process	OLA4000

□ Additional Selection in Repeat requisition

□ Auto Assignment of Repeat Sample No.

Default "NO" for both.

- Maker Parameters



Menu	Contents	Default
Average Life-time Display	Sets whether the screen displays the average lifetime of consumable parts	NO
Digits of Rack ID	Sets the digits of the rack ID (4 to 6) 5 is for connecting laboratory automation(LA)	4
Concentration of Acid Detergent	Sets the concentration of acid detergent (Detergent A). (1% or 2%)	2%
Concentration of Alkali Detergent	Sets the concentration of alkali detergent (Detergent B). (1% or 2%)	2%
LA Carry Time	Sets the time limit of the rack carrying the connecting for LA (0 to 255)	100
Automatic Line Feeder	Sets whether it will be connect to the automatic line feeder	NO
Power Frequency	Set the power frequency (50Hz or 60Hz)	50Hz (OAI) 60Hz
ISE Option	Set whether or not the ISE is placed on-line	NO
Year Date Format	America : dd/mm/yyyy Europe : mm/dd/yyyy Japan : yyyy/mm/dd	America
Destination	Sets the arrangement of the keyboard to America, Europe, or Japan	America
ISE Calibration Method type(serum)	Sets the ISE calibration type	Offset
ISE Calibration Method type(Urine)		Offset
ISE Calibration Method type(other)		Offset

(etc.)

Menu	Contents	Default
Cuvette Fatal Error Flag	Option to change "fatal-error" and "not fatal error" for “Error Cuvette” and “Cuvette check not performed.”	NO
Reagent Rest Count Type	Reagent Rest Count Type Yes: Real-Time Reagent Remain Volume calculation No: Count down	NO
Printer Error Process	Menu Select) Sets whether it will be started for printout at printer control of status screen Stop) Printout is stopped	Menu Select
Usage of Different Lot No. Reagent	If the lot No. is different when changing the reagent bottle, set “ Yes ” or “ No ” depending on whether the reagent should be dispensed Yes (Continue) or No (Stop)	NO
Check Non Fatal Error(STAT)	See the next page	
Check All Position(STAT)	See the next page	
Clot Detection	Clot detection function True/ False	True
Rack Step Check	Rack step check function True/ False	True
Off-line Delimiter	Space/ TAB/ Comma/ Period/ Colon/ Semicolon/ Under bar/ Slash/ Vertical	Comma

ISE option must be “Yes” in case using ISE.

- Maker Parameters

Bar code QC	Repeat run	etc	Requisition Process	OLA4000

Refer to Y11 (OPG01 Connection kit for OLA4000).

------**CheckNonFatalError(STAT) / CheckAllPosition(STAT) in Maker Parameters** ------

New parameters in System Maintenance(ver 2.0 and after)

Set **only** [a],[b] or [c] to these parameters.
Do **not** set other patterns except [a],[b] or [c].

[a]

	Check Non Fatal Error(STAT)
	Check All Position(STAT)

? In the case of [a], all parameters are default.
The system checks only fatal errors in _Start Window_ when starting with STAT SW.
And the system does not turn the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.

[b]

v	Check Non Fatal Error(STAT)
v	Check All Position(STAT)

The system checks fatal / non-fatal errors in _Start Window_ when starting with STAT SW.
And the system turns the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.

[c]

v	Check Non Fatal Error(STAT)
	Check All Position(STAT)

The system checks fatal / non-fatal errors in _Start Window_ when starting with STAT SW.
And the system does not turn the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.

[d]

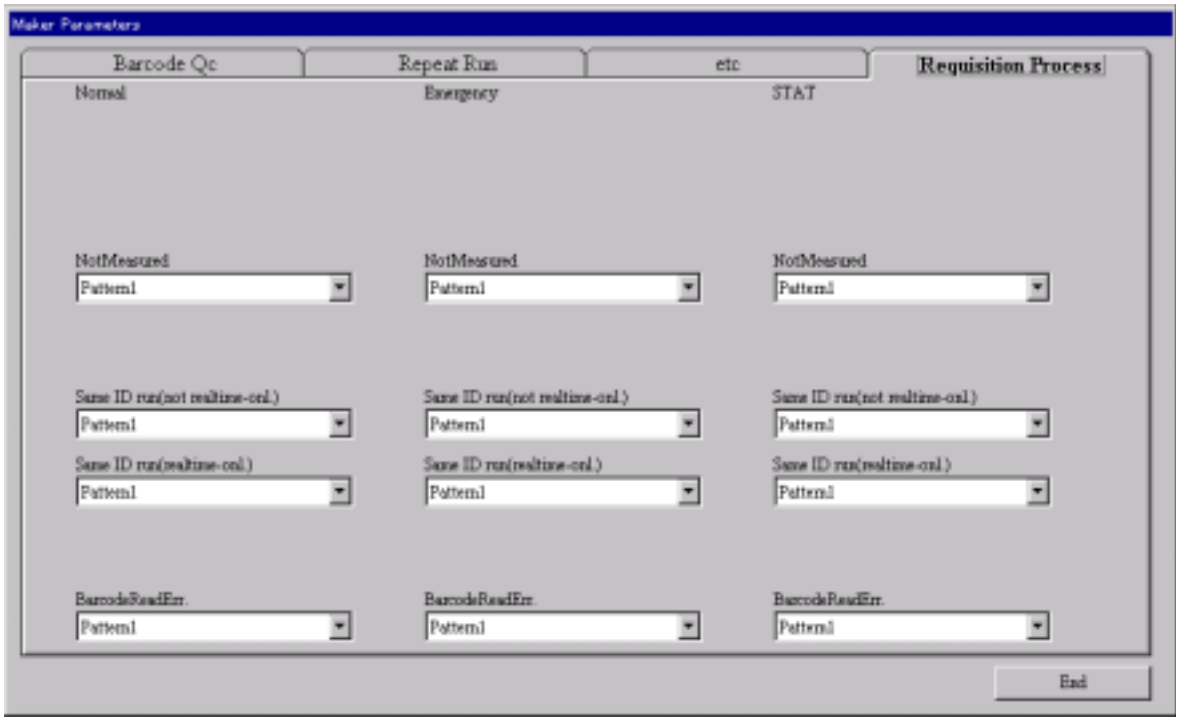
	Check Non Fatal Error(STAT)
v	Check All Position(STAT)

You should **not** set [d] to these parameters.
The system turns the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.
But the system checks only fatal errors in _Start Window_ when starting with STAT SW.
Therefore, this pattern is no meanings.

----------**Requisition Process in Maker Parameters** ----------

New parameters in System Maintenance(ver 2.0 and after)

Set **only** [a] or [b] to these parameters.
Do **not** set other patterns except [a] or [b].



[a]

In the case of [a], all parameters are default.
Requisition Process is performed as the old specification.

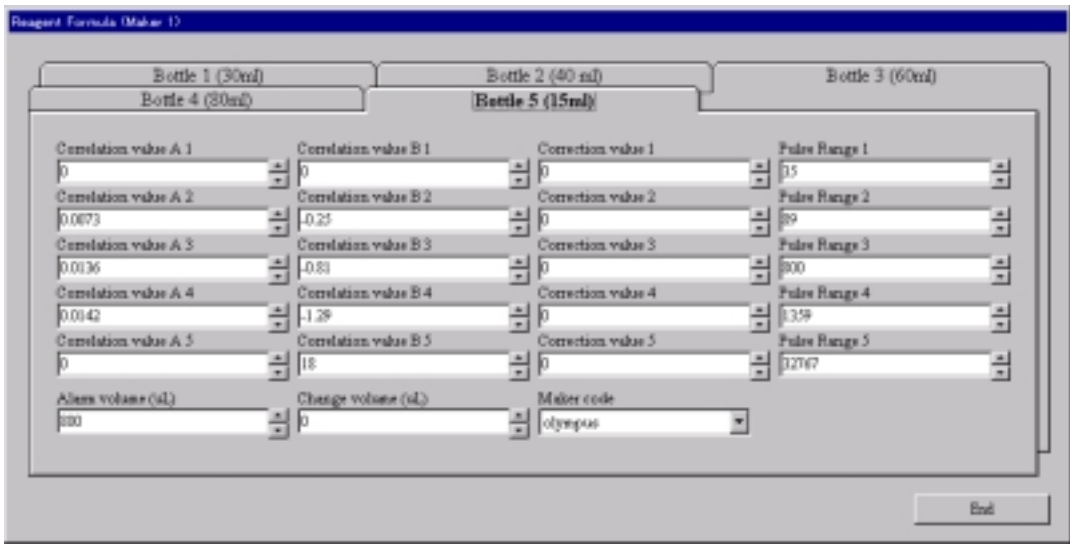
Pattern 1	Pattern 1	Pattern 1
Pattern 1	Pattern 1	Pattern 1
Pattern 1	Pattern 1	Pattern 1
Pattern 1	Pattern 1	Pattern 1

[b]

? In the case of [b], Requisition Process is performed as AU600.
<note>:
Same ID run(realtime-onl.) for STAT is _Pattern2_.

Pattern 2	Pattern 2	Pattern 2
Pattern 2	Pattern 2	Pattern 2
Pattern 3	Pattern 3	Pattern 2
Pattern 1	Pattern 1	Pattern 1

- Reagent formula (Maker 1)

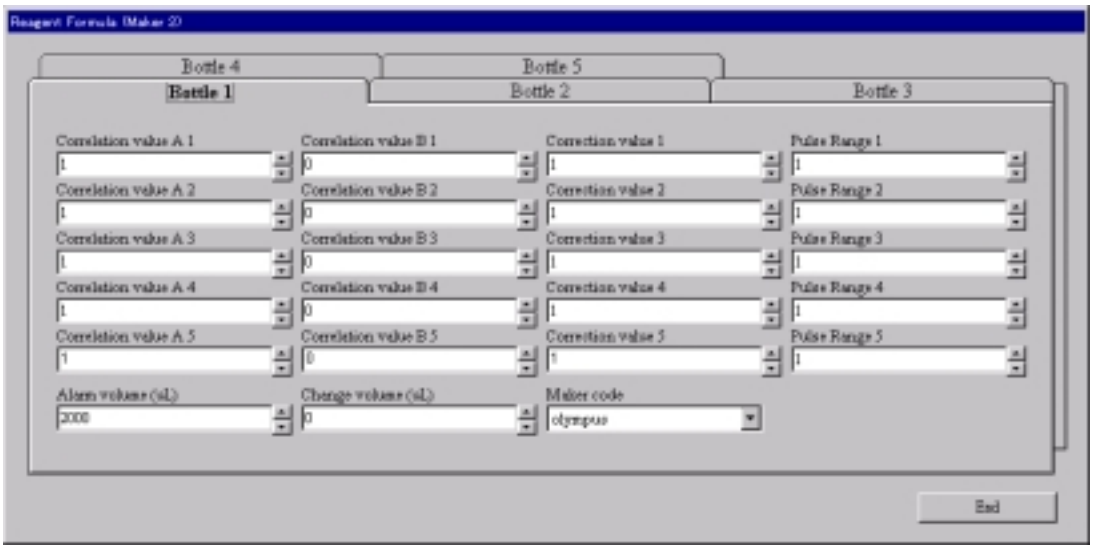


Reagent Formula (Maker 1)

Menu	Default Setting				
	Bottle 1(30)	Bottle 2(40)	Bottle 3(60)	Bottle 4(80)	Bottle 5(15)
Correlation value A1	0	0	0	0	0
Correlation value A2	0.0139	0.0253	0.014	0.045	0.0073
Correlation value A3	0.0253	0	0.045	0	0.0136
Correlation value A4	0	0	0	0	0.0142
Correlation value A5	0	0	0	0	0
Correlation value B1	0	0	0	0	0
Correlation value B2	0.4	-0.83	-0.34	-1.5	-0.25
Correlation value B3	-0.83	35	-1.5	60	-0.81
Correlation value B4	35	0	60	0	-1.29
Correlation value B5	0	0	0	0	18
Correlation value C1	0	0	0	0	0
Correlation value C2	0	0	0	0	0
Correlation value C3	0	0	0	0	0
Correlation value C4	0	0	0	0	0
Correlation value C5	0	0	0	0	0
Pulse Range 1	30	33	25	34	35
Pulse Range 2	38	1417	38	1367	89
Pulse Range 3	1418	32767	1368	32767	800
Pulse Range 4	32767	0	32767	0	1359
Pulse Range 5	0	0	0	0	32767
Alarm volume	2000	2000	2000	2000	2000
Change volume	0	0	0	0	0
Maker code	Olympus	Olympus	Olympus	Olympus	Olympus

Do not change the correlation value and the pulse range because the amount reagent remaining depends on the bottle size of each maker.

- Reagent formula (Maker 2)

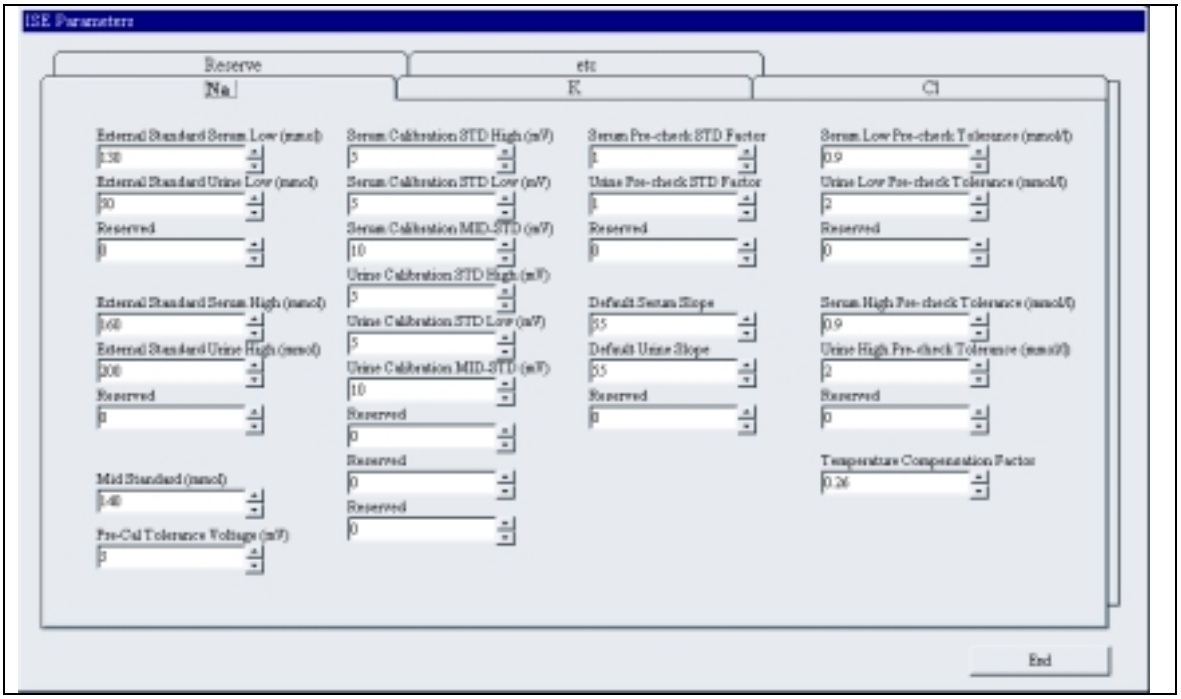


Reagent Formula (Maker 2)

Menu	Default Setting				
	Bottle 1(30)	Bottle 2(40)	Bottle 3(60)	Bottle 4(80)	Bottle 5(15)
Correlation value A1	1	1	1	1	1
Correlation value A2	1	1	1	1	1
Correlation value A3	1	1	1	1	1
Correlation value A4	1	1	1	1	1
Correlation value A5	1	1	1	1	1
Correlation value B1	0	0	0	0	0
Correlation value B2	0	0	0	0	0
Correlation value B3	0	0	0	0	0
Correlation value B4	0	0	0	0	0
Correlation value B5	0	0	0	0	0
Correlation value C1	1	1	1	1	1
Correlation value C2	1	1	1	1	1
Correlation value C3	1	1	1	1	1
Correlation value C4	1	1	1	1	1
Correlation value C5	1	1	1	1	1
Pulse Range 1	1	1	1	1	1
Pulse Range 2	1	1	1	1	1
Pulse Range 3	1	1	1	1	1
Pulse Range 4	1	1	1	1	1
Pulse Range 5	1	1	1	1	1
Alarm volume	2000	2000	2000	2000	2000
Change volume	0	0	0	0	0
Maker code	Olympus	Olympus	Olympus	Olympus	Olympus

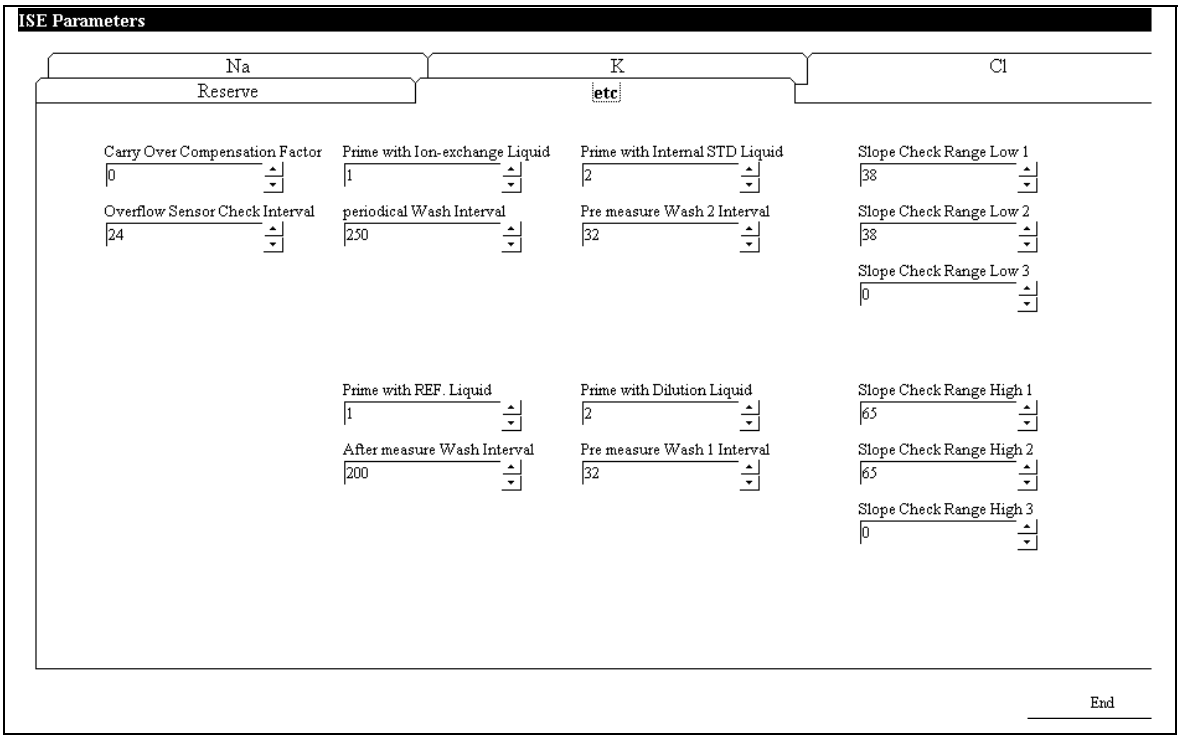
Do not change the correlation value and the pulse range because the amount reagent remaining depends on the bottle size of each maker.

- ISE Parameters



- ISE Parameters

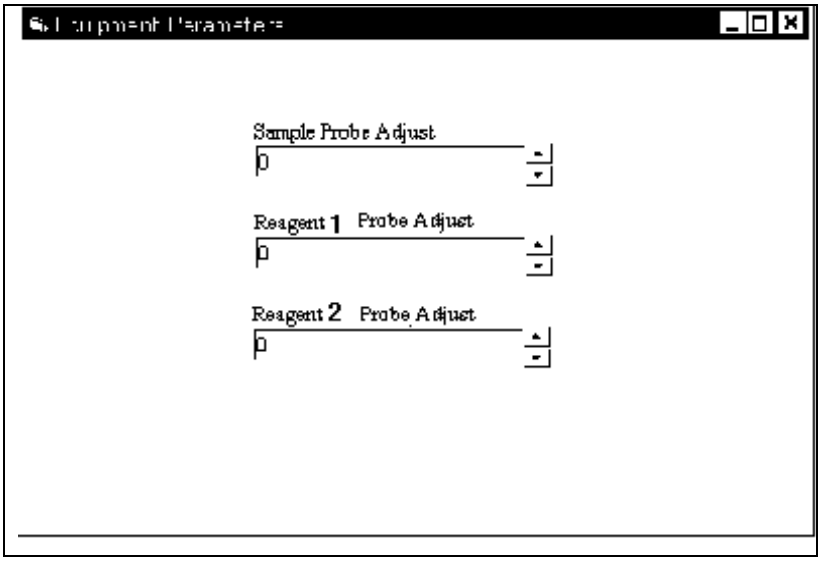
Menu	Default Setting			
	Na	K	Cl	Reserve
External Standard Serum Low	130	3.5	85	130
External Standard Urine Low	50	10	50	50
Reserved	0	0	0	0
External Standard Serum High	160	6	120	160
External Standard Urine High	200	100	180	200
Reserved	0	0	0	0
Mid Standard	140	4	100	140
Pre-Cal Tolerance Voltage	5	15	5	5
Serum Calibration STD High	5	5	5	5
Serum Calibration STD Low	5	5	5	5
Serum Calibration MID-STD	10	10	10	10
Urine Calibration STD High	5	30	5	5
Urine Calibration STD Low	5	30	5	5
Urine Calibration MID-STD	10	30	10	10
Reserved	0	0	0	0
Reserved	0	0	0	0
Reserved	0	0	0	0
Serum Pre-check STD Factor	1	1	1	1
Urine Pre-check STD Factor	1	1	1	1
Reserved	0	0	0	0
Default serum slope	55	55	-55	55
Default urine slope	55	55	-55	55
Reserved	0	0	0	0
Serum Low-check Tolerance	0.9	0.18	0.8	0.9
Urine Low-check Tolerance	2	0.3	2	2
Reserved	0	0	0	0
Serum High-check Tolerance	0.9	0.18	0.8	0.9
Urine High-check Tolerance	2	2	1.8	2
Reserved	0	0	0	0
Temperature Compensation Factor	0.26	0.25	-0.12	0.26



etc.

Menu	Contents	Default Setting
Carry Over Compensation Factor		0
Overflow Sensor Check Interval		24
Prime with Ion-exchange Liquid		1
periodical Wash Interval		500
Prime with REF Liquid		1
After measure Wash Interval		400
Prime with Internal STD Liquid		2
Pre measure Wash 2 Interval		64
Prime with Dilution Liquid		2
Pre measure Wash 1 Interval		64
Slope Check Range Low 1		38
Slope Check Range Low 2		38
Slope Check Range Low 3		0
Slope Check Range High 1		68
Slope Check Range High 2		68
Slope Check Range High 3		0

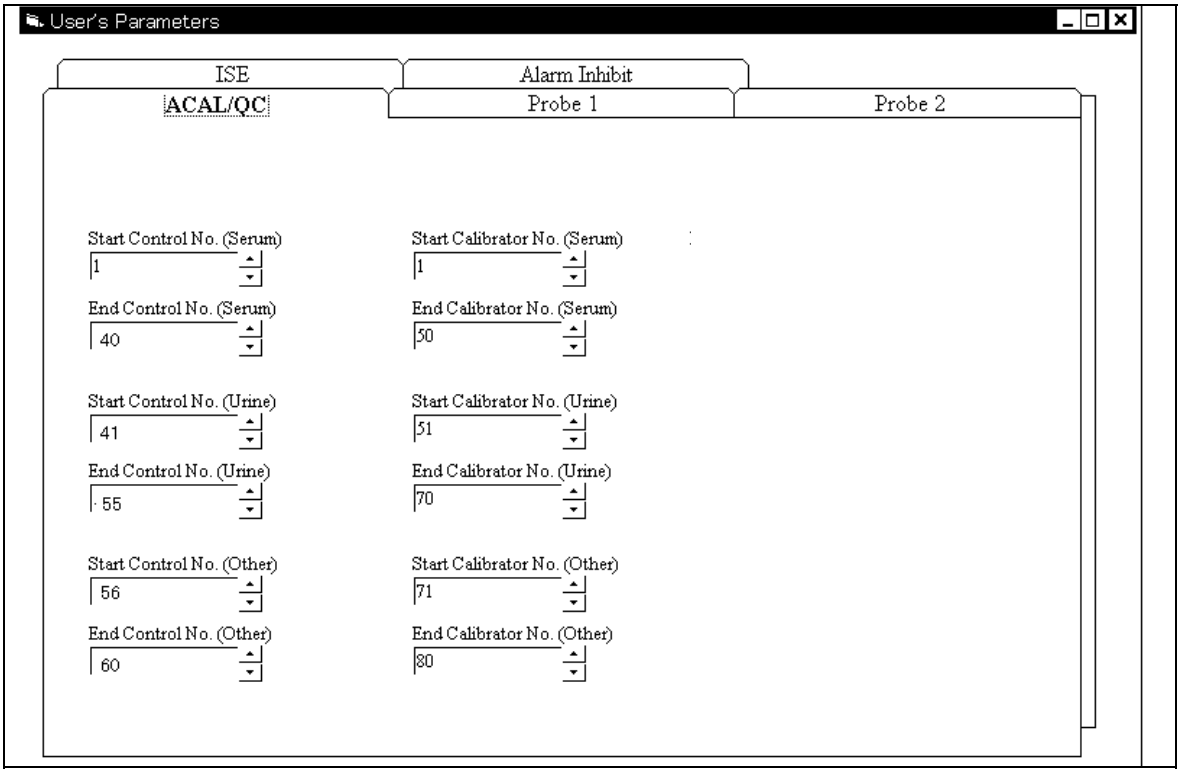
- Equipment Parameters



Equipment Parameters

Menu	Contents	Default
Sample Probe Adjustment	Correction pulse for S-probe rotate (-100 to 100) app. 0.4mm/ pulse	0
Reagent 1 Probe Adjustment	Correction pulse for R1-probe rotate (-100 to 100) app. 0.4mm/ pulse	0
Reagent 2 Probe Adjustment	Correction pulse for R2-probe rotate (-100 to 100) app. 0.4mm/ pulse	0

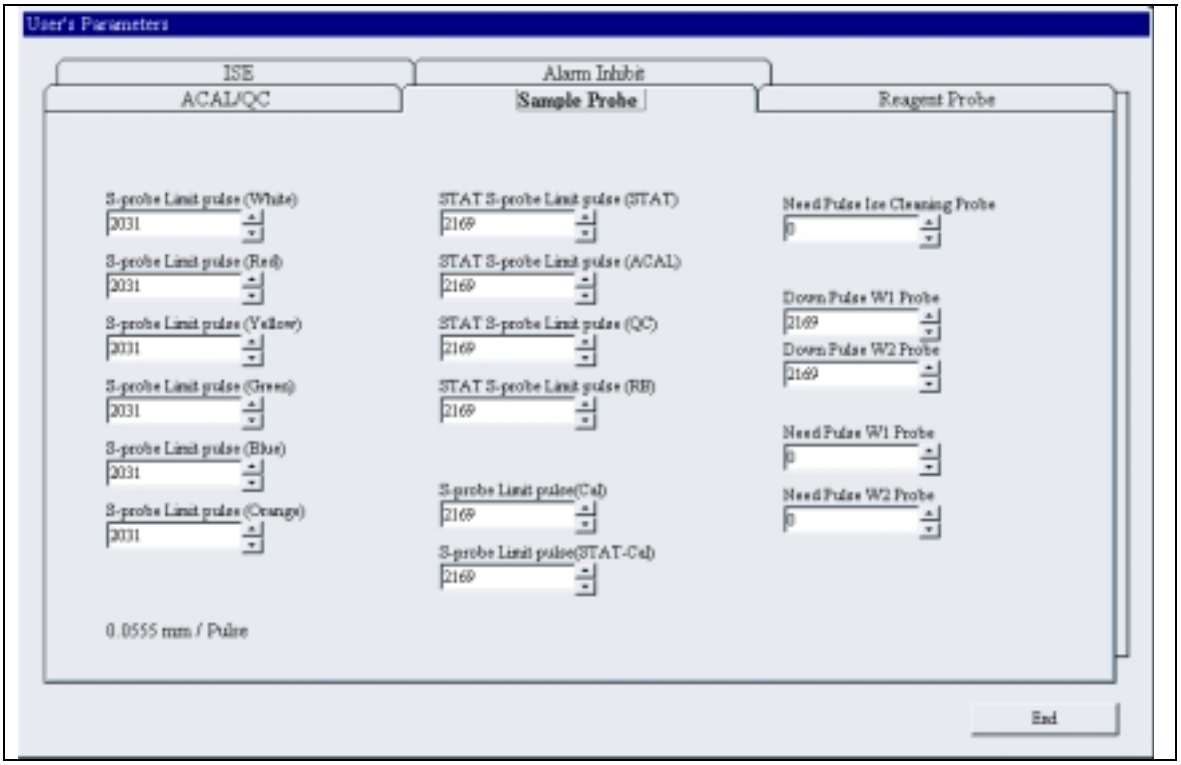
- User Parameters



User Parameters
ACAL/QC

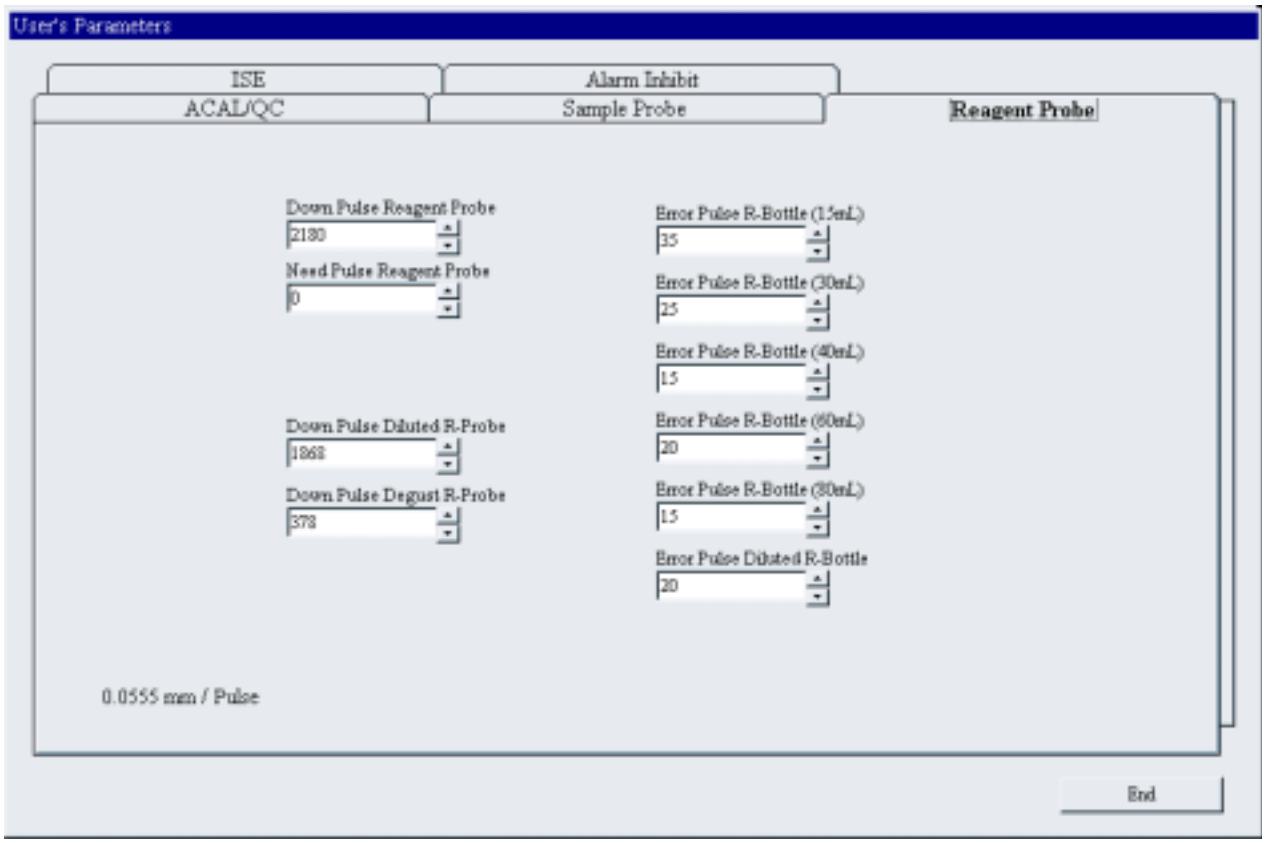
Menu	Contents	Default Setting
Start Control No. (Serum)	Set depending on the kind of sample and the quantity for sixty kinds of QC sample.	1
End Control No. (Serum)		40
Start Control No. (Urine)		41
End Control No. (Urine)		55
Start Control No. (Other)		56
End Control No. (Other)		60
Start Calibrator No. (Serum)	Set depending on the kinds of sample and the quantity for eighty kinds of ACL sample.	1
End Calibrator No. (Serum)		50
Start Calibrator No. (Urine)		51
End Calibrator No. (Urine)		70
Start Calibrator No. (Other)		71
End Calibrator No. (Other)		80

(Note) Set required value for each customer.



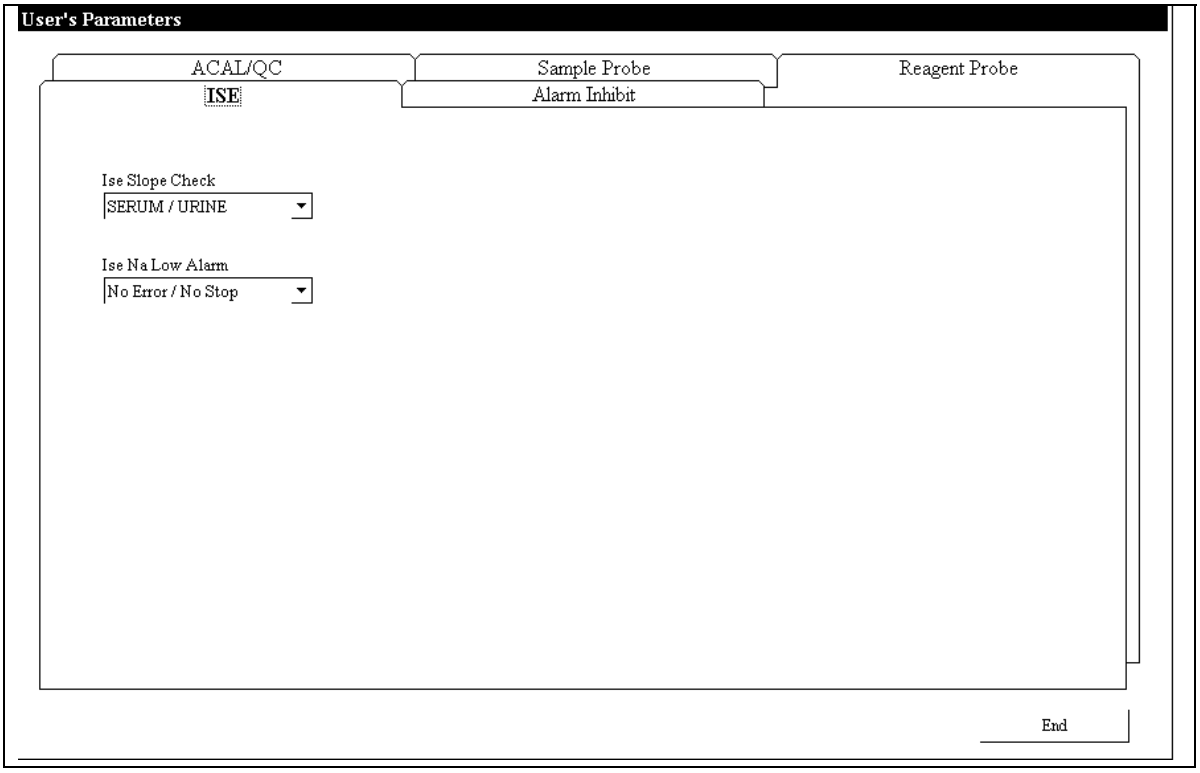
Sample Probe

Menu	Contents	Default Setting
S-probe Limit pulse (White)	Sets the sample probe lower limit depending on the cups used in each rack	2031
S-probe Limit pulse (Red)		2031
S-probe Limit pulse (Yellow)		2031
S-probe Limit pulse (Green)	Sets the dead-volume	2031
S-probe Limit pulse (Blue)		2031
S-probe Limit pulse (Orange)		2031
STAT S-probe Limit pulse (STAT)		2169
STAT S-probe Limit pulse (ACAL)		2169
STAT S-probe Limit pulse (QC)		2169
STAT S-probe Limit pulse (RB)		2169
S-probe Limit pulse (Cal)	Not used	2169
S-probe Limit pulse (STAT-Cal)	Not used	2169
Pulse ISE Cleaning Probe Required	Set the minimum amount of detergent required to clean the ISE (From the limit pulse to the minimum required)	240
Down Pulse W1 Probe	Sets the sample probe lower limit at the W1 and W2 position	2169
Down Pulse W2 Probe	Sets the dead volume	2169
Need Pulse W1 Probe Required	Sets the minimum amount of detergent required for W1 and W2	240
Need Pulse W2 Probe Required	(From the limit pulse to the minimum required)	160



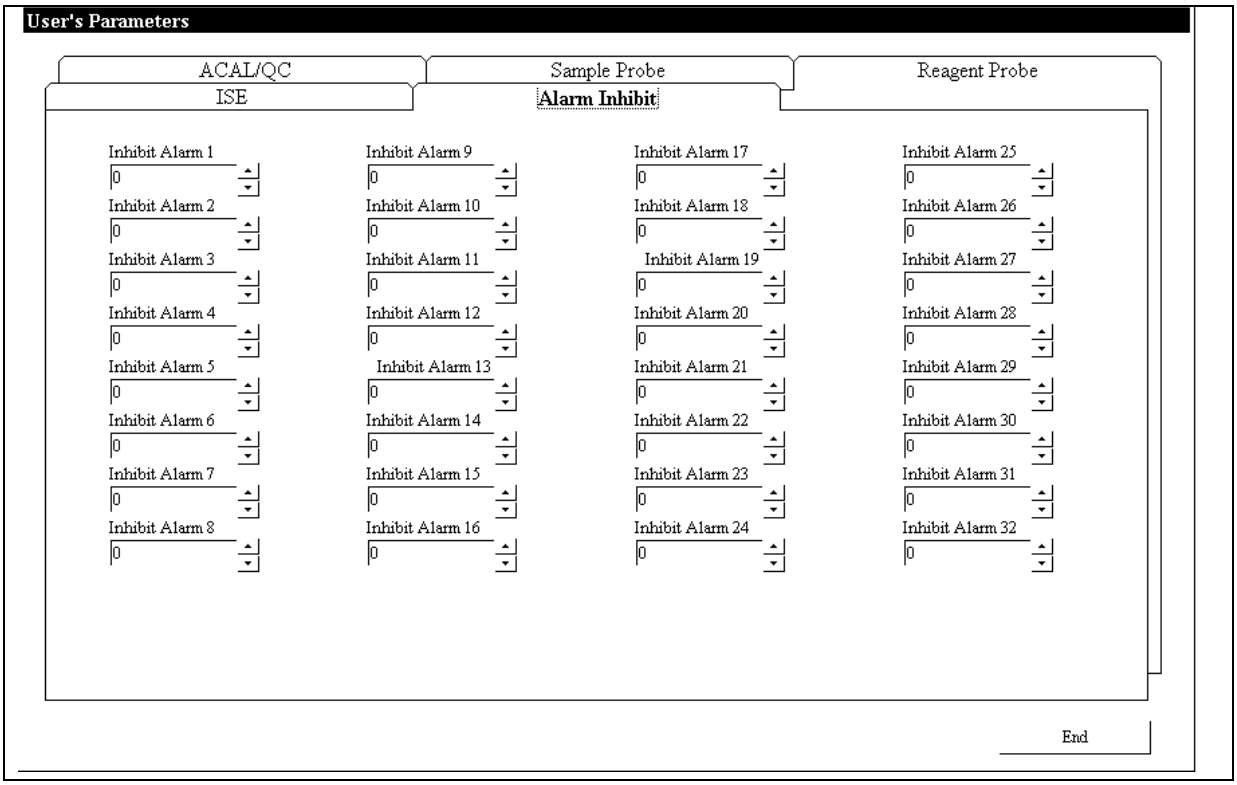
Reagent Probe

Menu	Contents	Default
Down Pulse Reagent Probe	Sets the sample probe lower limit depending on each position	2180
Need Pulse Reagent Probe	Needed Detergent value for W2 Sets the dead volume	0
Down Pulse Diluted R-Probe	Not used	1868
Down Pulse Degust R-Probe	Not used	378
Error Pulse R-Bottle (15ml)	Min probe diving for 15ml bottle	30
Error Pulse R-Bottle (30ml)	Min probe diving for 30ml bottle	25
Error Pulse R-Bottle (40ml)	Min probe diving for 40ml bottle	15
Error Pulse R-Bottle (60ml)	Min probe diving for 60ml bottle	20
Error Pulse R-Bottle (80ml)	Min probe diving for 80ml bottle	15
Error Pulse Diluted R-Bottle	Min probe diving for Diluent bottle	20



ISE

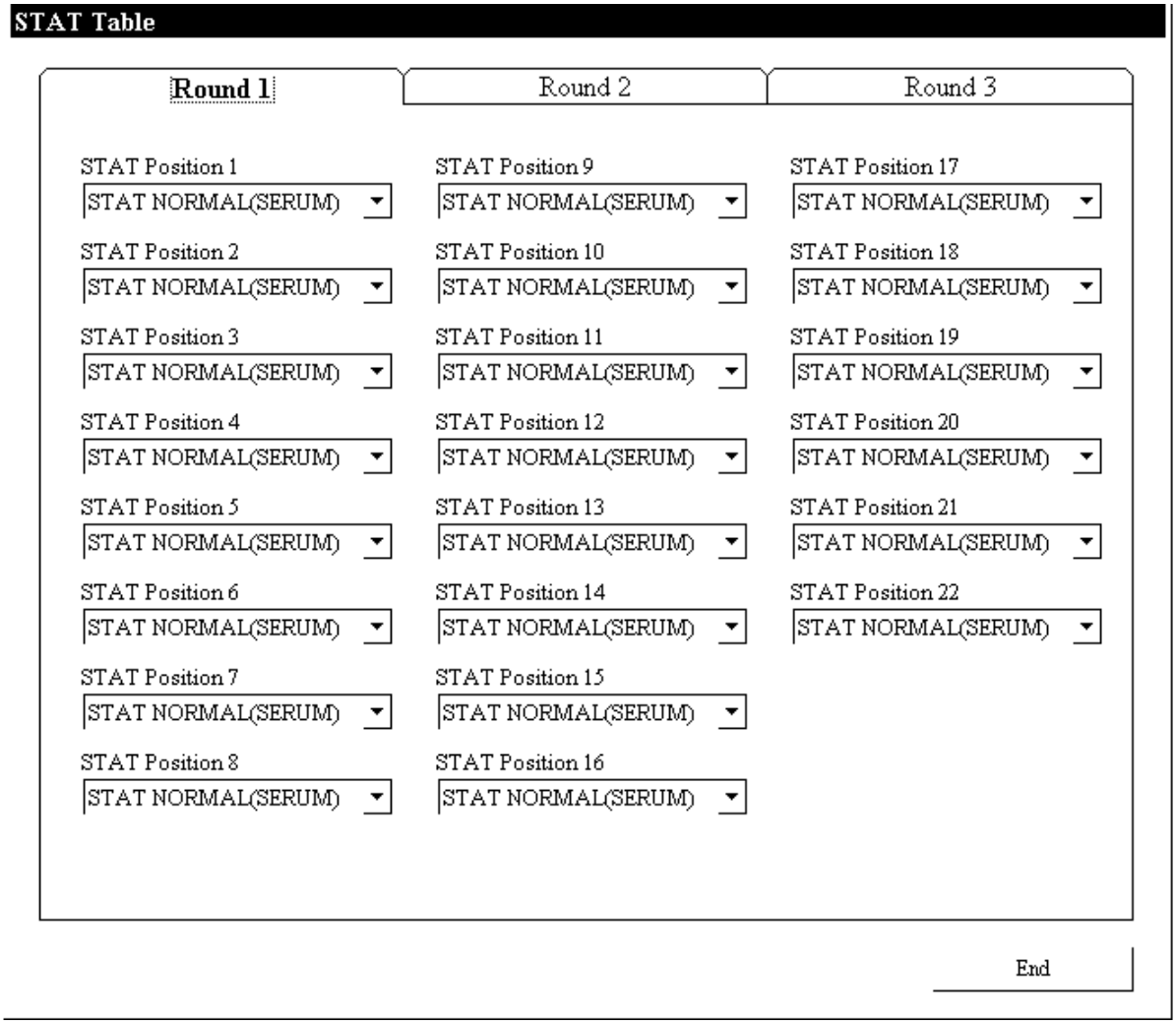
Menu	Contents	Default
ISE Slope Check	Sets whether ISE slope check is performed.	Serum / Urine
ISE Na Low Alarm	The Na data is low (less than 70) on three consecutive samples *No Error / No Stop *Error / Stop *Error / No Stop	No Error / No Stop



Turn Of Alarm

Menu	Contents	Default
Turns Of Alarms 1 to 32	Sets the numbers of the alarms to be turned of Not listed	

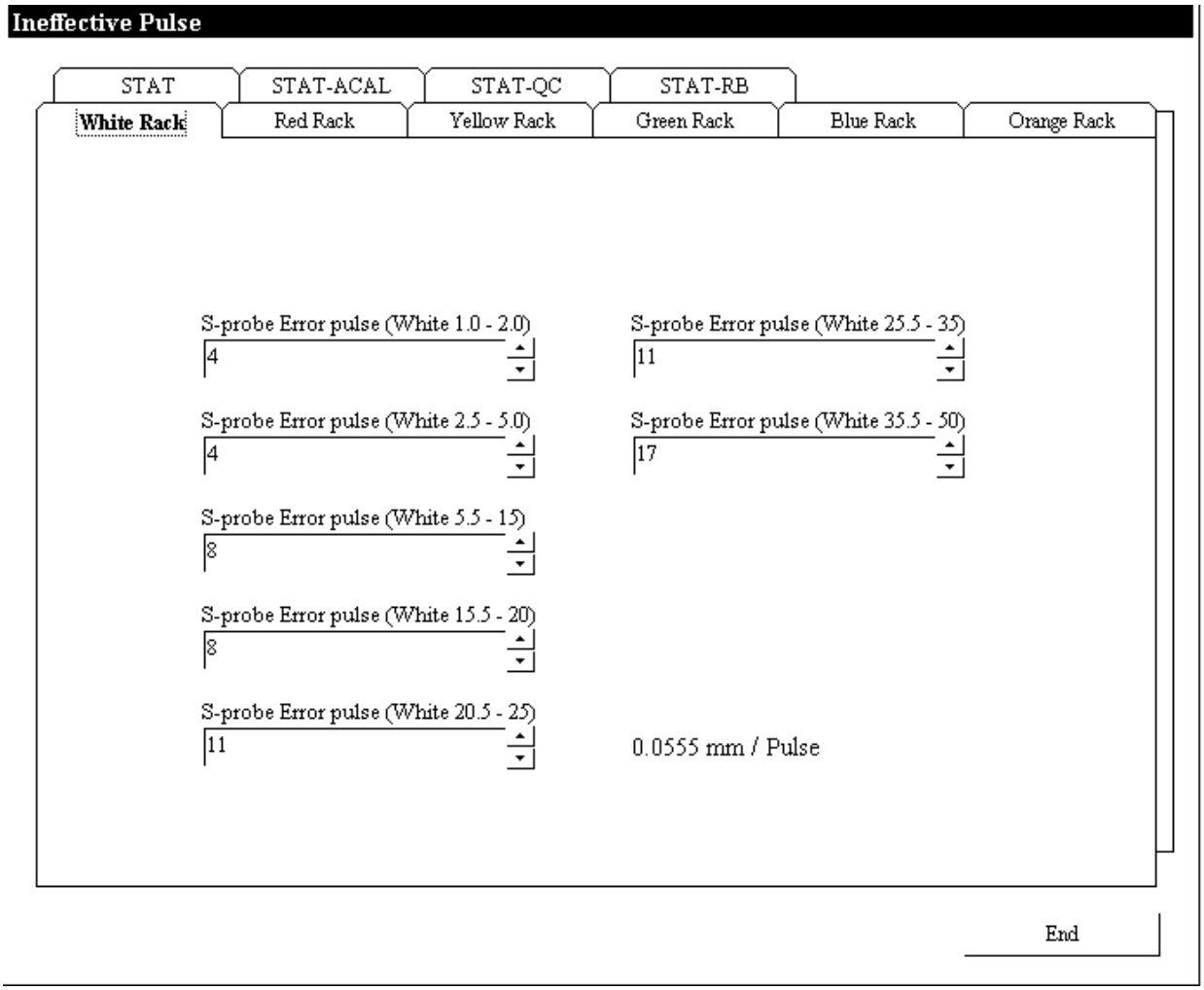
● STAT Table



STAT Table

Menu	Contents	Default
STAT Position 1 to 22	Sets the kind of sample for the twenty-two STAT positions STAT NORMAL (SERUM) STAT NORMAL (URINE) STAT NORMAL (OTHER) RB ACAL(Serum) ACAL(Urine) ACAL(Other) QC(Serum) QC(Urine) QC(Other)	STAT NORMAL (SERUM)

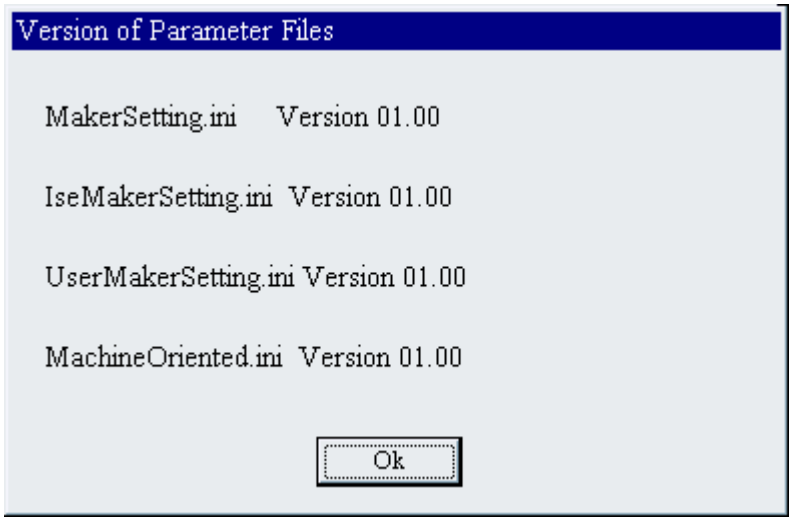
● Ineffective Pulse



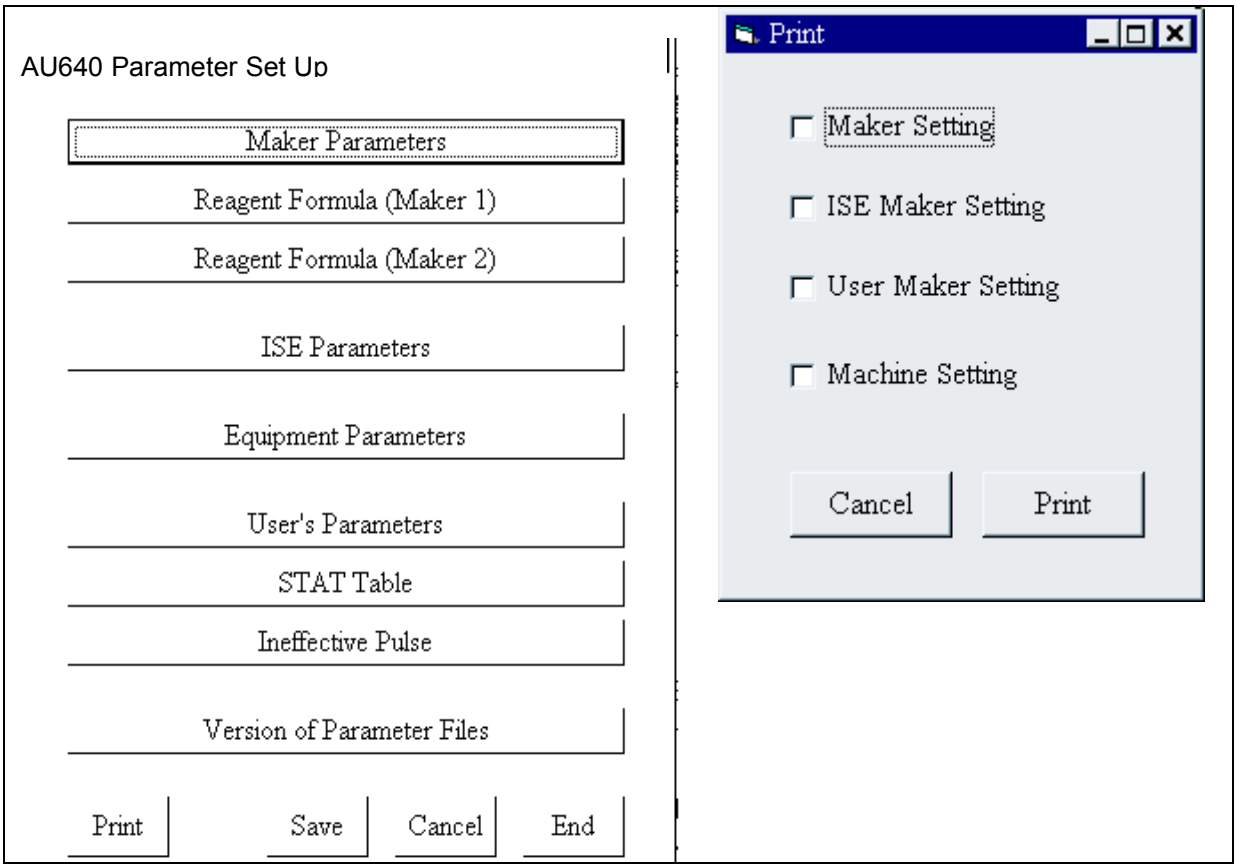
Ineffective Pulse White Rack to STAT RB

Menu	Contents	Default
S-Probe Error Pulse(xxxx 1.0 to 2.0)		4
S-Probe Error Pulse(xxxx 2.5 to 5.0)		4
S-Probe Error Pulse(xxxx 5.5 to 15)		8
S-Probe Error Pulse(xxxx 15.5 to 20)		8
S-Probe Error Pulse(xxxx 20.5 to 25)		11
S-Probe Error Pulse(xxxx 25.5 to 35)		11
S-Probe Error Pulse(xxxx 35.5 to 50)		17

- **Version of Parameter files**



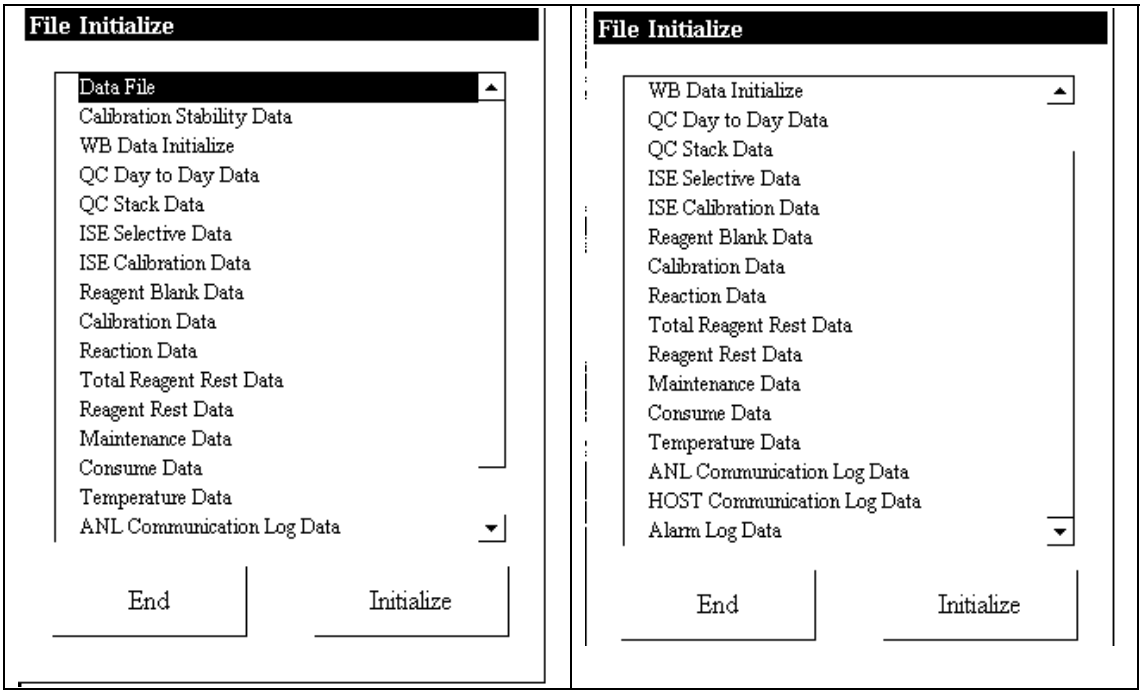
● Function Key



	Contents
Print	Prints out the parameters (After the screen in Fig 2 has been displayed, the parameters to be printed out can be selected.)
Save	Saves changed parameters on the hard disk through a query from a dialog box
Cancel	Changes are not save and the dialog box is closed
End	Closes the menu. If selecting End, a dialog box querying whether to save or not appears.

::::

■ File Intialize

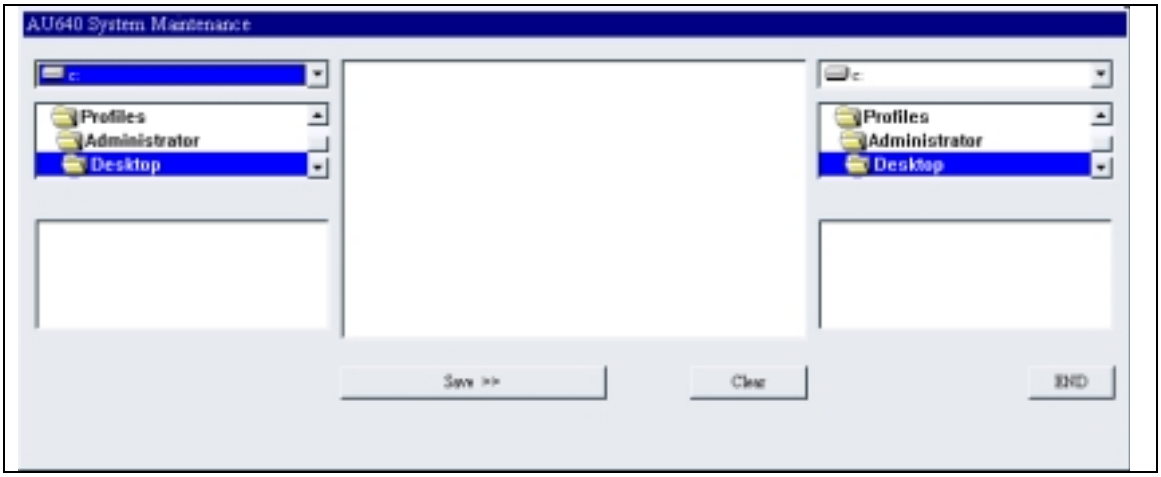


File Initialization

Click the object to be initialized.

File	Contents
Data File	
Calibration Stability	
WB Data Initialization	
QC Day to Day Data	
QC Stack Data	
ISE Selective Data	
ISE Calibration Data	
Reagent Blank Data	
Calibration Data	
Reaction Data	
Total Reagent Rest Data	
Reagent Rest Data	
Maintenance Data	
Consume Data	
Temperature Data	
ANL Communication Log Data	
HOST Communication Log Data	
Alarm Log Data	

■ Parameter / Data Save & Restore



Pull down the menu on the left side to specify the files to be saved, and, on the right side, pull down the menu to specify the folder they are to be saved in. Push the [save] button to save.

*This screen may be changed in the future.
It is the file initialization screen, and it may be changed to specify the files to be saved using a list of files.

■ Maintenance

Maintenance [Parameter Convert], [Version Up Information] is used to update the version of the program. At present, this menu does not exist because there is no newer version of the program.

Item	Contents
Parameter Convert	Parameters of old and new versions of the program are incompatible. Parameters of the old version can be converted to those of the new program.
Version Up Information	Specific program update information is shown. It is the same information that is in History Table B.

■ Configuration

This menu is only for development purpose.
System color setting
Reserve

■ Installation Procedures for the Ver. 2.0 on the AU640

If you'll up date from V 1.1, follow the step **In the case of update from V1.1**.
If you'll install AU640 for PC that is **not** currently using with AU640, follow the step **In the case of new installation of AU640 program**.

----------**In the case of update from V1.1**----------

Caution: If you'll up date , the following parameter is initialized.
The parameter "Maker Setting" of System Maintenance

[0] Print out the parameter of Maker Setting in System Maintenance.
You'll press "Print" in Parameter Set Up of System Maintenance Menu, select "Maker
Setting" and press "Print", you can print out "Maker Setting".
Make a memorandum of Offline Delimiter since it is not printed due to software bug.

[1] Boot up the AU640.

[2] Press "Q" key while "Wait a few seconds" message is displaying.

[3] Click the "END" button on window.

[4] Insert Program CD-ROM.

[5] Select Start – Run from NT, and D:\Utility\Cnv\Cnvrt.BAT
.....(drive name may be different depends on HD partition) and press "OK".
Do not run Cnvrt.BAT from Explore.

[6] A window is open on the screen, and the message as below is displayed.

'**** START [Convert] ****
Press any key to continue...

[7] Then, Press any key and the parameter conversion are started on the window.

When finishing the parameter conversion , you can see the message as below.

'**** END [Convert] ****
Press any key to continue...

[8] Then, Press any key and close the window.

[9] Select Start – Run from NT, and D:\Utility\Cnv\M521LACnvrt.BAT(drive name may be different depends on HD partition) and press "OK".
Do not run M521LACnvrt.BAT from Explore.

[10] A window is open on the screen, and the message as below is displayed.

'**** START [Convert] ****
Press any key to continue...

Then, Press any key and wait for a moment and another window with the “Convert!!!” button is displayed.
“Untitled-LA ParameterConverter” is displayed in the window title.

[11] You’ll press the “Convert!!!” button, and you can see the dialogue “ i Sart [LA Parameter Convert] ” with “OK” and “Cancel” buttons.
Then, Press “OK”, and the conversion of parameter start.
Wait for a moment and the displayed massage is changed from “ i START [LA Parameter Convert] ” to “ i END [LA Parameter Convert] ”.

[12] Press the “OK” button, and the dialogue is closed.
Then you’ll press the button “.” on the Up-right corner of the **gray** window.
And the gray window is closed.
When finishing the parameter conversion, you can see the message as below.

'**** END [Convert] ****
Press any key to continue...

[13] Then, Press any key and close the window.

[14] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press . OK. .
Do not run Setup.exe from Explore.

[15] Press “Next” twice.

[16] Select “Custom” and click “Next”.

[17] Remove “√“ marks on the Parameter files, Data files, Other data files.
Caution: The remaining files must attach “√“ marks.

[18] Click “Next”. It will start loading, and follow the screens.

[19] After completion of Set-up, select “Yes, I want to restart my computer”.
And press . Finish.

[20] Press “Q” key while “Wait a few seconds” message is displaying.
Watching the paper printed out, re-entry the parameter in Maker Parameters of System
Maintenance.
<note>
In this time, the following parameter are added or changed in System Maintenance.
parameter for 15mL bottle,CheckAllPosition(STAT), CheckNonFatalError (STAT), RequisitionProcess,Destination
You do **not** change Destination.

[21] After completion of re-entry the parameter of System Maintenance, you click "END" on Main System Maintenance Menu after save.

[22] Click "Start" of Windows NT , select "Shut down" and and press . Yes. . Wait until PC says "It is now safe to turn off your computer".

[23] Press "EM STOP", "Reset", and "ON" of the ANL.

That's all.

----------**In the case of new installation of AU640 program**----------

[0] Boot up the AU640.

[1] Press “Q” key while “Wait a few seconds” message is displaying.

[2] Click the “END” button on window.

[3] Insert Program CD-ROM.

[4] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press . OK. .
Do not run Setup.exe from Explore.

[5] Press “Next” twice.

[6] Select “Typical” and click “Next”. It will start loading, and follow the screens.

[7] After completion of Set-up, select “Yes, I want to restart my computer”.
And press . Finish. .

[8] Press “Q” key while “Wait a seconds” message is displaying.

[9] Install Acrobat, INI files and DAO on the system maintenance menu.

[10] Set up other parameters according to the ANL conditions.
<note>
You do **not** change Destination.

[11] Click “END” on the main system maintenance menu after “SAVE”.

[12] Set up Windows NT Screen Property. Refer to next page.

[13] Click “Start” of Windows NT , select “Shut down” and press . Yes. .
Wait until PC says “It is now safe to turn off your computer”.

[14] Press “EM STOP”, ”Reset”, and “ON” of the ANL.

<Windows NT Screen Property setup>

[1] Show Screen Property of Windows NT(Control panel)
[2] Set Color palette to 65536 colors.

<Note>

..Program Version

DPR	Program Ver. 2.0
ANL	Program Ver. 2.00
ISE	Program Ver. 1.0 (No change.)

■ Printer Tool

(Ver2.0 and after)

This function should be used for that you select printers which you deliver to users or that service engineers set new printers for users.
"New printers" means printers, which are performed with printer driver defined before.
<note>
? It is necessary to use PrinterTool that only one driver is set for each printer port.
? Users do not use this function.

How to use printer tool.

[0] Boot up the AU640.

[1] Press "Q" key while "Wait a few seconds" message is displaying.

[2] Click the "END" button on window.

[3] Select Start – Run from NT, and C:\AU640\Utility\PrinterTool\PrinterTool.exe and press "OK".
Do not run PrinterTool.exe from Explore.

[4] The window with the "OK" button is displayed.
"PrinterDriverName Setting Tool" is displayed in the window title.

[5] You'll press the "OK" button, and the Printer setting process start.
Wait for a moment and you can see the dialogue with "OK" button.
Check that the message of the dialogue is "Successful" and that the printer driver name in LPT1:XXXXX/LPT2: :XXXXX are correct.
If it is not so, check the setting of printer driver again.

[6] Press the "OK" button, and the dialogue and the gray window are closed.

[7] Click "Start" of Windows NT and select "Shut down " , and wait until PC says "It is now safe to turn off your computer".

[8] Press "EM STOP", "Reset", and "ON" of the ANL.

That's all.

■

● Maker Parameters

Bar code QC	Repeat run	etc	Requisition Process	OLA4000

□ Use Rili-Back (Only German Market)

Default “NO”.

Bar code QC	Repeat run	etc	Requisition Process	OLA4000

□ Additional Selection in Repeat requisition

□ Auto Assignment of Repeat Sample No.

Default “NO” for both.

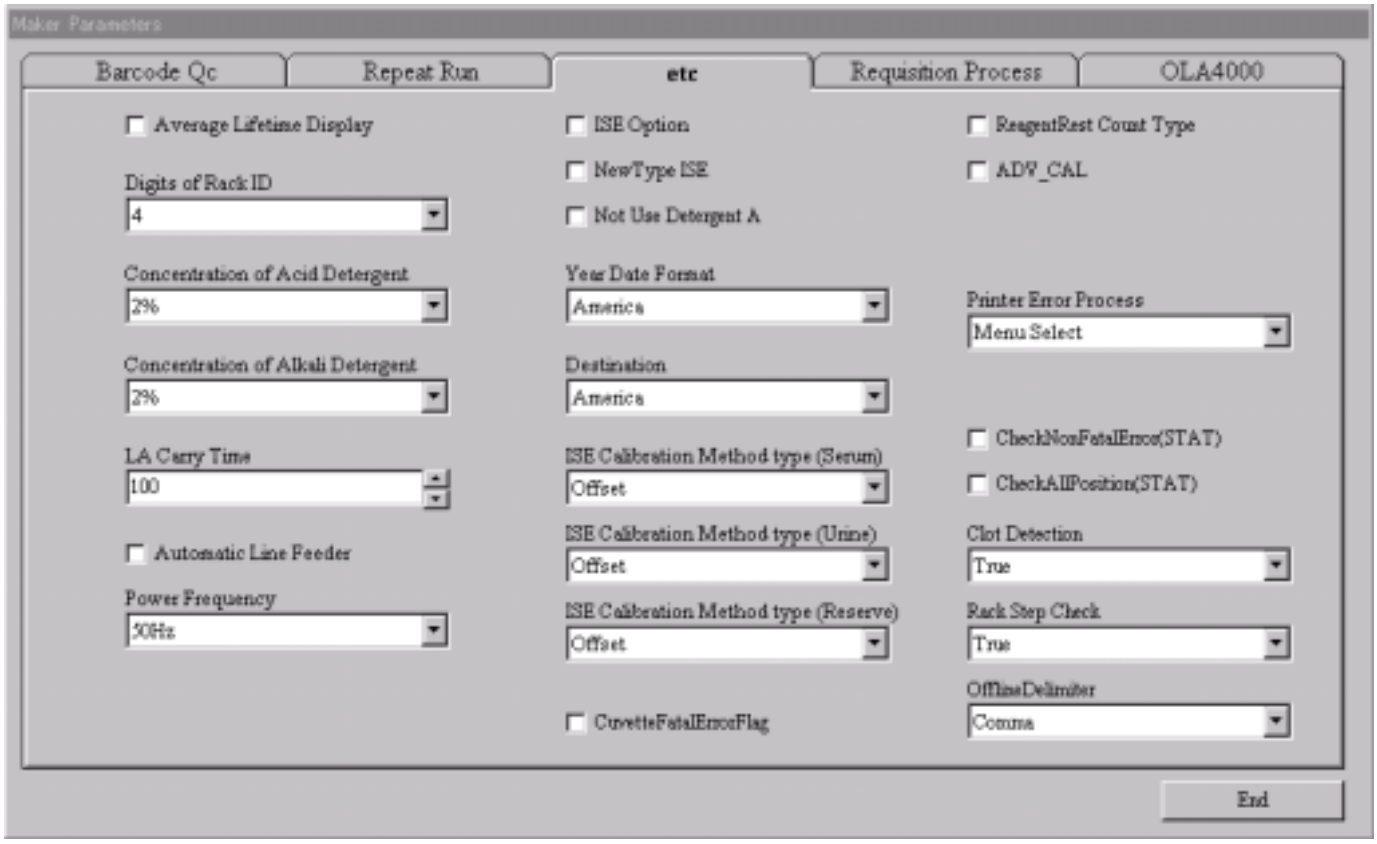
Additional Selection in Repeat requisition

The items, which are not selected in the normal run, can be selected in the repeat test requisition.

Auto Assignment of Repeat Sample No.

Repeat sample No. can be created automatically.

- Maker Parameters



Menu	Contents	Default
Average Life-time Display	Sets whether the screen displays the average lifetime of consumable parts	NO
Digits of Rack ID	Sets the digits of the rack ID (4 to 6) 5 is for connecting laboratory automation(LA)	4
Concentration of Acid Detergent	Sets the concentration of acid detergent (Detergent A). (1% or 2%)	2%
Concentration of Alkali Detergent	Sets the concentration of alkali detergent (Detergent B). (1% or 2%)	2%
LA Carry Time	Sets the time limit of the rack carrying the connecting for LA (0 to 255)	100
Automatic Line Feeder	Sets whether it will be connect to the automatic line feeder	NO
Power Frequency	Set the power frequency (50Hz or 60Hz)	50Hz (OAI) 60Hz
ISE Option	Set whether or not the ISE is placed on-line	No
New Type ISE	Used in Japanese market, only	No
Not Use Detergent A	Yes= Detergent B only (Only Checked in case UG type and not use Detergent A) There is no guarantee if you disable detergent A, even the detergent A piping is existing)	No
Year Date Format	America : dd/mm/yyyy Europe : mm/dd/yyyy Japan : yyyy/mm/dd	America
Destination	Sets the arrangement of the keyboard to America, Europe, or Japan	America

Menu	Contents	Default
ISE Calibration Method type(serum)	Sets the ISE calibration type	Offset
ISE Calibration Method type(Urine)		Offset
ISE Calibration Method type(other)		Offset
Cuvette Fatal Error Flag	Option to change "fatal-error" and "not fatal error" for “Error Cuvette” and “Cuvette check not performed.”	NO
Reagent Rest Count Type	Reagent Rest Count Type Yes: Real-Time Reagent Remain Volume calculation This function is not working on ver 4.2 No: Count down	NO
ADV_CAL	Yes = Advanced _CAL set No = Advanced _CAL not set	
Printer Error Process	Menu Select) Sets whether it will be started for printout at printer control of status screen Stop) Printout is stopped	Menu Select
Check Non Fatal Error(STAT)	See the next page	
Check All Position(STAT)	See the next page	
Clot Detection	Clot detection function True/ False	True
Rack Step Check	Rack step check function True/ False	True
Off-line Delimiter	Space/ TAB/ Comma/ Period/ Colon/ Semicolon/ Under bar/ Slash/ Vertical	Comma

ISE option must be “Yes” in case using ISE.

------**CheckNonFatalError(STAT) / CheckAllPosition(STAT) in Maker Parameters** ------

New parameters in System Maintenance(ver 2.0 and after)

Set **only** [a],[b] or [c] to these parameters.
Do **not** set other patterns except [a],[b] or [c].

[a]

	Check Non Fatal Error(STAT)
	Check All Position(STAT)

? In the case of [a], all parameters are default.
The system checks only fatal errors in _Start Window_ when starting with STAT SW.
And the system does not turn the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.

[b]

v	Check Non Fatal Error(STAT)
v	Check All Position(STAT)

The system checks fatal / non-fatal errors in _Start Window_ when starting with STAT SW.
And the system turns the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.

[c]

v	Check Non Fatal Error(STAT)
	Check All Position(STAT)

The system checks fatal / non-fatal errors in _Start Window_ when starting with STAT SW.
And the system does not turn the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.

[d]

	Check Non Fatal Error(STAT)
v	Check All Position(STAT)

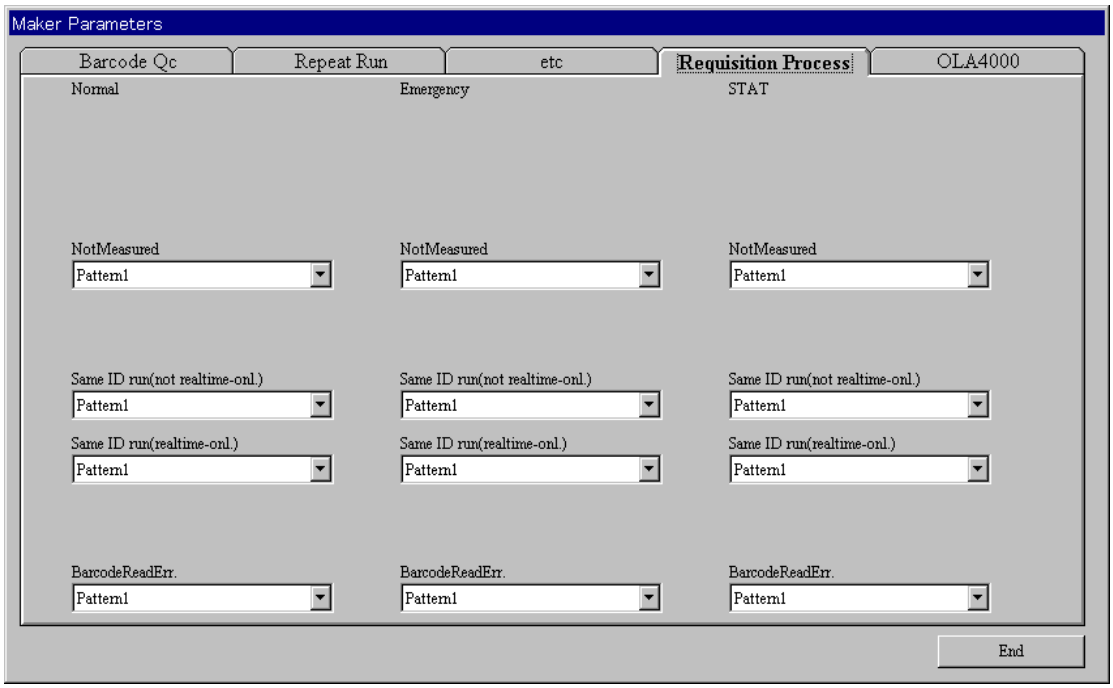
You should **not** set [d] to these parameters.
The system turns the STAT table to check whether there are RB/Calibrator/QC cups on STAT table when starting with STAT SW.
But the system checks only fatal errors in _Start Window_ when starting with STAT SW.
Therefore, this pattern is no meanings.

----------Requisition Process in Maker Parameters ----------

New parameters in System Maintenance (ver 2.0 and after)

Set **only** [a] or [b] to these parameters.
Do **not** set other patterns except [a] or [b].

- Requisition Process



- Menu outline

  Setting of the Inquiry/Response mode to the Host computer.

• NotMeasured

for Sequential/Rack No. analysis

Online mode	Pattern	No Test requisition	Test requisition completed Corresponding Sample No. not Measured	Test requisition completed Corresponding Sample No. Measured
Realtime	Pattern1	Inquiry to Host.	Not inquiry to Host. Measured by the item which a test requisition completed in DPR.	Not inquiry to Host. Measured by the item which a test requisition completed in DPR. (Test result is overwritten.)
	Pattern2	Same as above	Inquiry to Host.	Same as above
Batch/None	Pattern1	Measured by profile0	Measured by the item which a test requisition completed in DPR.	Same as above
	Pattern2	Same as above	Same as above	Same as above

• Same ID run

for Bar code analysis

Online mode	Pattern	*0No Test requisition*	Test requisition completed Not measured S.ID not less than a 1 sample was registered in DPR	Test requisition completed S.ID not less than a 1 sample was registered in DPR And all sample has been measured
Realtime	Pattern1	Inquiry to Host.	Measured by the item which a test requisition completed in DPR. If registration of more than one same S.ID exist in DPR, Measured by the smallest S.No. Measured test requisition not use.	Not inquiry to Host. Measured by the item which a test requisition completed in DPR. (Test result is overwritten.)
	Pattern2	Same as above	Same as above	Same as above
	Pattern3	Same as above	Inquiry to Host.	Same as above
Batch/None	Pattern1	Measured by profile0	Measured by the item which a test requisition completed in DPR. If registration of more than one same S.ID exist in DPR, Measured by the smallest S.No. Measured test requisition not use.	Measured by profile0
	Pattern2	Same as above	Measured by the item which a test requisition completed in DPR. **More than one same S.No. can not register in DPR*	Not inquiry to Host. Measured by the item which a test requisition completed in DPR. (Test result is overwritten.)

• BarcodeReadErr

Inquiry/Response pattern of the sample ID read error in Bar code analysis/Real time online.

Pattern1: Measured by profile0

Pattern2: Inquiry to Host.

[a]

In the case of [a], all parameters are default.
Requisition Process is performed as the old specification.

Pattern 1	Pattern 1	Pattern 1
Pattern 1	Pattern 1	Pattern 1
Pattern 1	Pattern 1	Pattern 1
Pattern 1	Pattern 1	Pattern 1

[b]

? In the case of [b], Requisition Process is performed as AU600.
<note>:
Same ID run(realtime-onl.) for STAT is _Pattern2_.

Pattern 2	Pattern 2	Pattern 2
Pattern 2	Pattern 2	Pattern 2
Pattern 3	Pattern 3	Pattern 2
Pattern 1	Pattern 1	Pattern 1

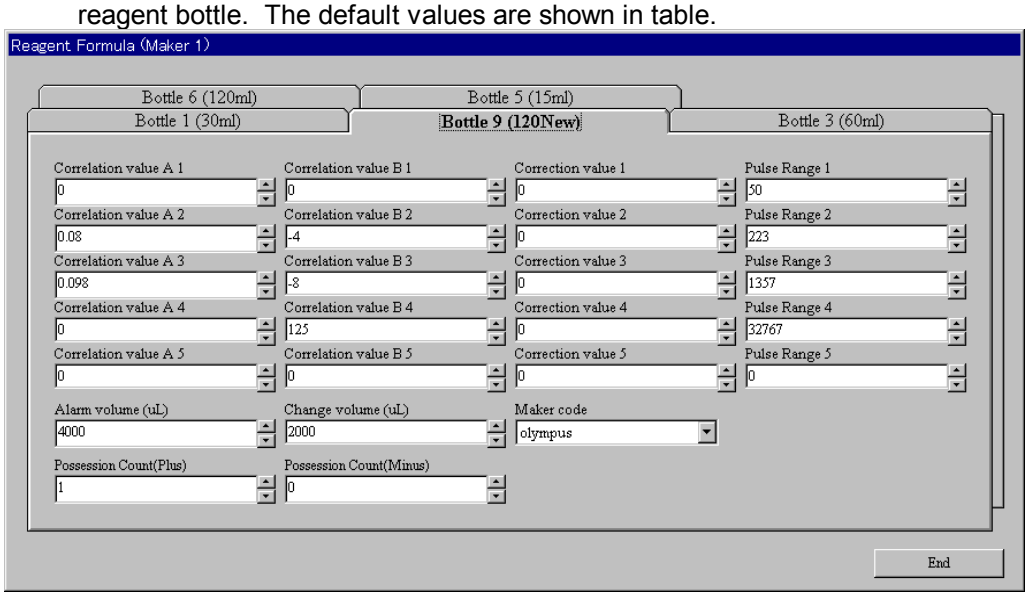
- OLA4000

For European market LA

Bar code QC	Repeat run	etc	Requisition Process	OLA4000
□ Option 1	□ Option 3		□ Option 6	
□ Option 2	□ Option 4			
	□ Option 5			

Default “NO” for all.

- Reagent formula (Maker 1)
  This is the menu for setting the coefficients for the calculation formula for the liquid rest for each reagent bottle. The default values are shown in table.

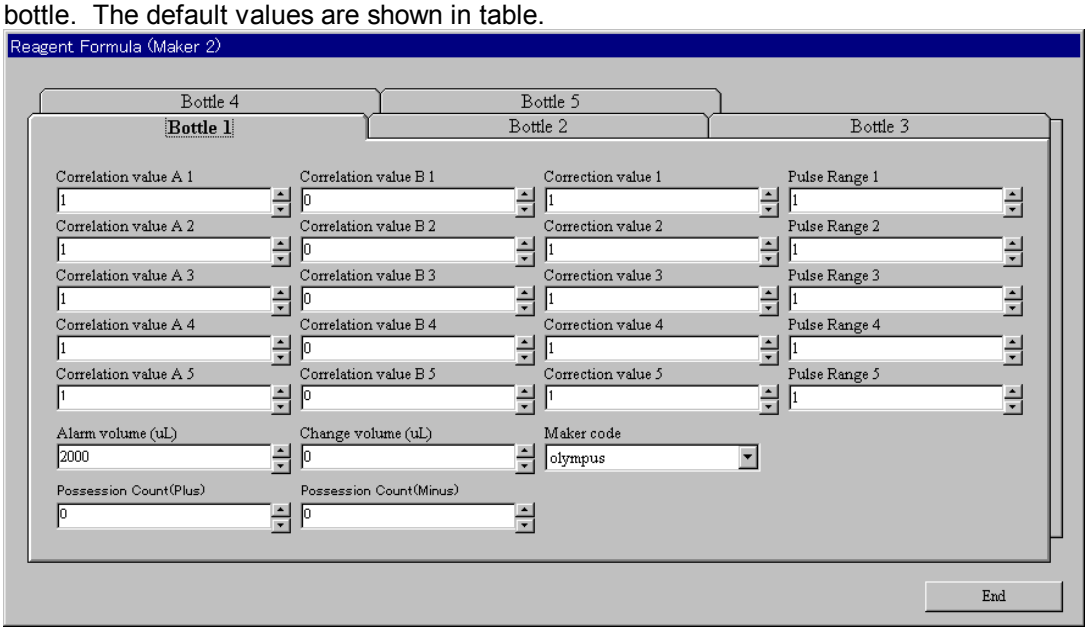


Item	Default				
	Bottle 1 30mL	Bottle 9 120New	Bottle 3 60mL	Bottle 6 120ml	Bottle 5 15mL
Correlation value A1	0	0	0	0	0
Correlation value A2	0.0139	0.08	0.014	0.08	0.0073
Correlation value A3	0.0253	0.098	0.045	0.098	0.0136
Correlation value A4	0	0	0	0	0.0142
Correlation value A5	0	0	0	0	0
Correlation value B1	0	0	0	0	0
Correlation value B2	-0.4	-4	-0.34	-4	-0.25
Correlation value B3	-0.83	-8	-1.5	-8	-0.81
Correlation value B4	35	125	60	125	-1.29
Correlation value B5	0	0	0	0	18
Correlation value 1	0	0	0	0	0
Correlation value 2	0	0	0	0	0
Correlation value 3	0	0	0	0	0
Correlation value 4	0	0	0	0	0
Correlation value 5	0	0	0	0	0
Pulse Range 1	30	50	25	50	35
Pulse Range 2	38	223	38	223	89
Pulse Range 3	1418	1357	1368	1357	800
Pulse Range 4	32767	32767	32767	32767	1359
Pulse Range 5	0	0	0	0	32767
Alarm volume (μL)	2000	4000	2000	4000	800
Change volume (μL)	1000	2000	1000	2000	0
Maker code	olympus	Olympus	olympus	olympus	olympus
Possession Count (Plus)	0	1	0	1	0
Possession Count (Minus)	0	0	0	0	0

Do not change the settings of this menu unless instructed to do so.

- Reagent formula (Maker 2)

This is the menu for setting the coefficients for the calculation formula for the liquid rest for each reagent bottle. The default values are shown in table.

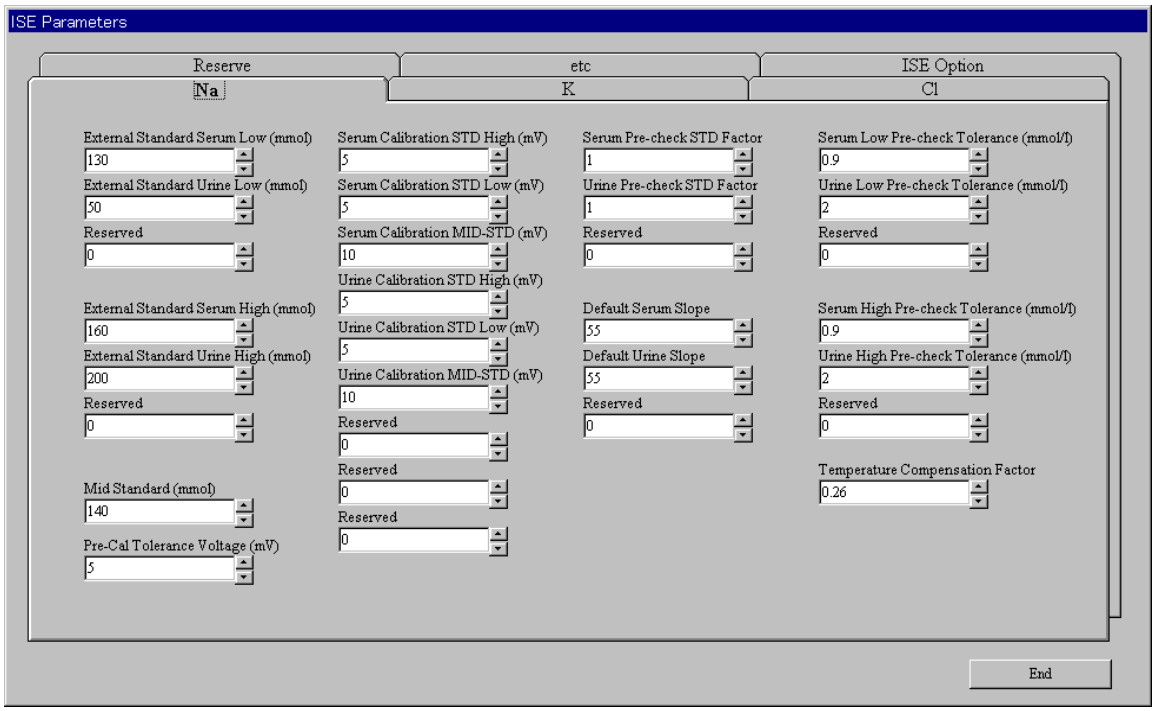


Item	Default				
	Bottle1	Bottle2	Bottle3	Bottle4	Bottle5
Correlation value A1	1	1	1	1	1
Correlation value A2	1	1	1	1	1
Correlation value A3	1	1	1	1	1
Correlation value A4	1	1	1	1	1
Correlation value A5	1	1	1	1	1
Correlation value B1	0	0	0	0	0
Correlation value B2	0	0	0	0	0
Correlation value B3	0	0	0	0	0
Correlation value B4	0	0	0	0	0
Correlation value B5	-0.01	0	0	0	0
Correlation value 1	1	1	1	1	1
Correlation value 2	1	1	1	1	1
Correlation value 3	1	1	1	1	1
Correlation value 4	1	1	1	1	1
Correlation value 5	1	1	1	1	1
Pulse Range 1	1	1	1	1	1
Pulse Range 2	1	1	1	1	1
Pulse Range 3	1	1	1	1	1
Pulse Range 4	1	1	1	1	1
Pulse Range 5	1	1	1	1	1
Alarm volume (μL)	2000	2000	2000	2000	800
Change volume (μL)	0	0	0	0	0
Maker code	olympus	olympus	olympus	olympus	olympus
Possession Count(Plus)	0	0	0	0	0
Possession Count(Minus)	0	0	0	0	0

Do not change the settings of this menu unless instructed to do so.

- ISE Parameters
  - •Menu outline

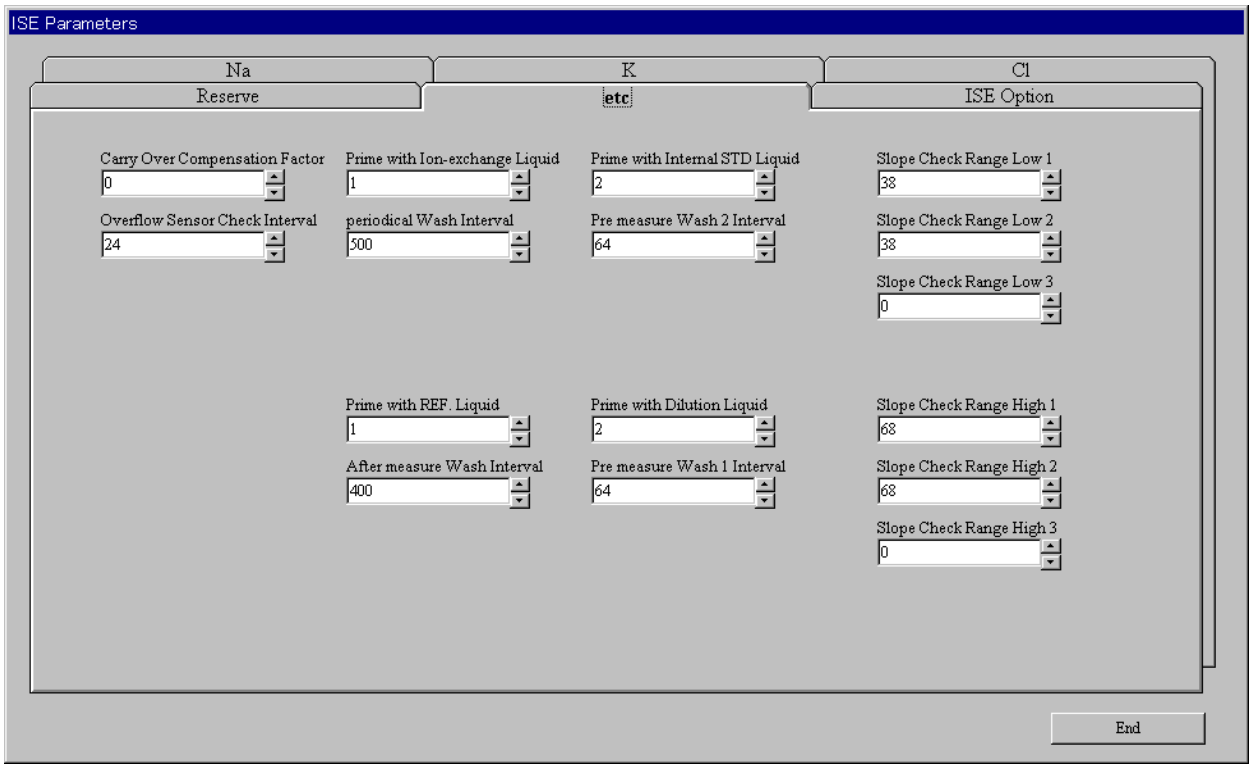
    This is the menu for setting the coefficients for the ISE calculation formula.
    Do not change these set values, as otherwise the ISE data will change.
    The default values are shown on the next page.



ISE Parameters

Menu	Default Setting			
	Na	K	Cl	Reserve
External Standard Serum Low	130	3.5	85	130
External Standard Urine Low	50	10	50	50
Reserved	0	0	0	0
External Standard Serum High	160	6	120	160
External Standard Urine High	200	100	180	200
Reserved	0	0	0	0
Mid Standard	140	4	100	140
Pre-Cal Tolerance Voltage	5	15	5	5
Serum Calibration STD High	5	5	5	5
Serum Calibration STD Low	5	5	5	5
Serum Calibration MID-STD	10	10	10	0.01
Urine Calibration STD High	5	30	5	5
Urine Calibration STD Low	5	30	5	5
Urine Calibration MID-STD	10	30	10	0.01
Reserved	0	0	0	0
Reserved	0	0	0	0
Reserved	0	0	0	0
Serum Pre-check STD Factor	1	1	1	1
Urine Pre-check STD Factor	1	1	1	1
Reserved	0	0	0	0
Default serum slope	55	55	-55	55
Default urine slope	55	55	-55	55
Reserved	0	0	0	0
Serum Low-check Tolerance	0.9	0.18	0.8	0.9
Urine Low-check Tolerance	2	0.3	2	2
Reserved	0	0	0	0
Serum High-check Tolerance	0.9	0.18	0.8	0.9
Urine High-check Tolerance	2	2	1.8	2
Reserved	0	0	0	0
Temperature Compensation Factor	0.26	0.25	-0.12	0.26

etc

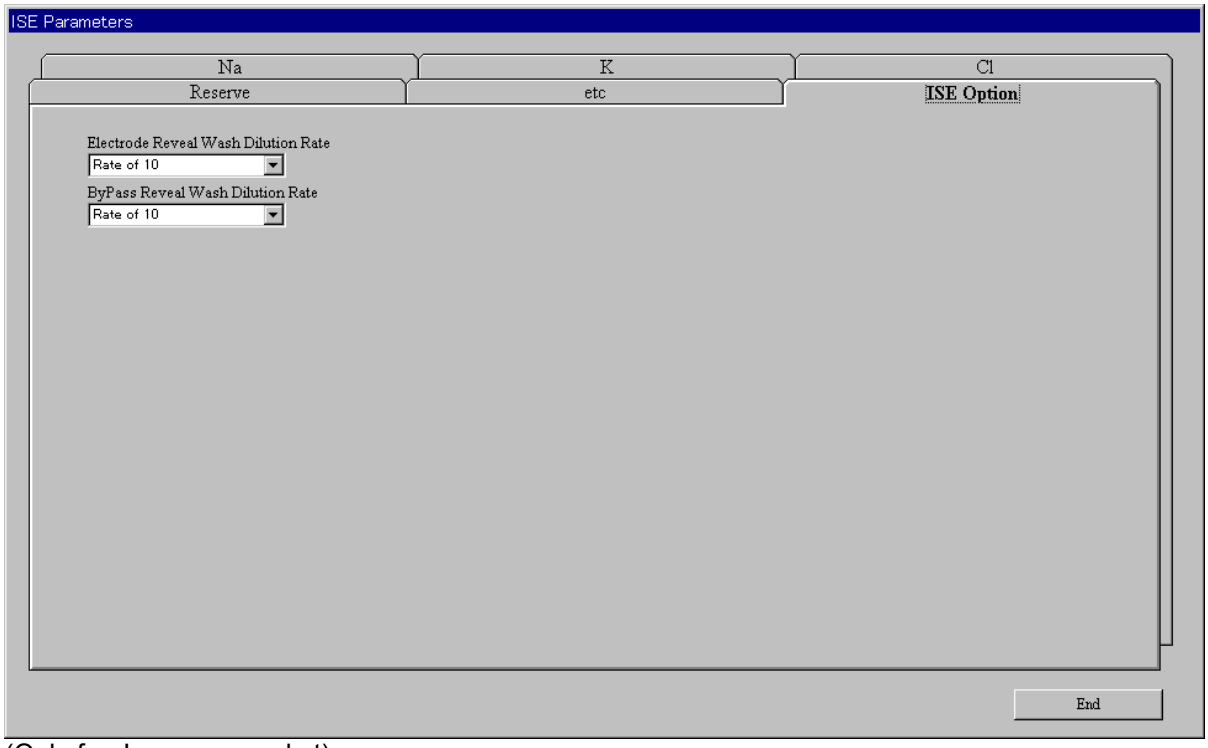


etc.

Menu	Outline	Default
Carry Over Compensation Factor	(Na/K/Cl) Data correlation factor	0
Overflow Sensor Check Interval	Overflow sensor check interval [Hour]	24
Prime with Ion-exchange Liquid	Prime time(s)/ DI water [Time(s)]	1
periodical Wash Interval	periodical Wash Interval [*4.5s]	500
Prime with REF Liquid	Prime time(s)/ REF [Time(s)]	1
After measure Wash Interval	After measure Wash Interval [*4.5s]	400
Prime with Internal STD Liquid	Prime time(s)/ MID STD [Time(s)]	2
Pre measure Wash 2 Interval	Pre measure Wash 2 Interval [*4.5s]	64
Prime with Dilution Liquid	Prime time(s)/ Dilution [Time(s)]	2
After measure Wash 1 Interval	After measure Wash 1 Interval [*4.5s]	64
Slope Check Range Low 1	Slope Check Range Low Limit (Serum)	38
Slope Check Range Low 2	Slope Check Range Low Limit (Urine)	38
Slope Check Range Low 3	Slope Check Range Low Limit (Reserve)	0
Slope Check Range High 1	Slope Check Range High Limit (Serum)	68
Slope Check Range high 2	Slope Check Range High Limit (Urine)	68
Slope Check Range High 3	Slope Check Range High Limit (Reserve)	0

(Note)
After measure wash: Execute when measure serum after urine. In case of no ISE test after urine, have interval with the parameter [* 4.5sec]. Also execute this wash post measure wash start.
Pre measure wash 1: Execute at start. Execute if the ISE has interval more than the parameter.
Pre measure wash 2: Not used. (Set the same value with Pre measure wash 1)
Periodical wash: Interval of wash. (Measure, not measure, and power OFF). The timer is reset, if ISE work something. (The relationship for 3 parameters: 3< Pre measure< After measure< Periodical< 65537)

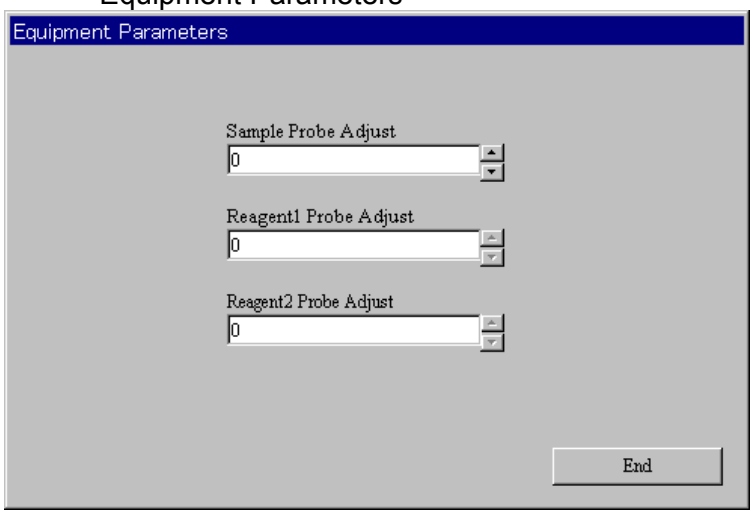
- ISE Option



(Only for Japanese market)
Electrode Reveal Wash Dilution Rate
Rate of 5
Rate of 10 (Default)

Bypass Reveal Wash Dilution Rate
Rate of 5
Rate of 10 (Default)

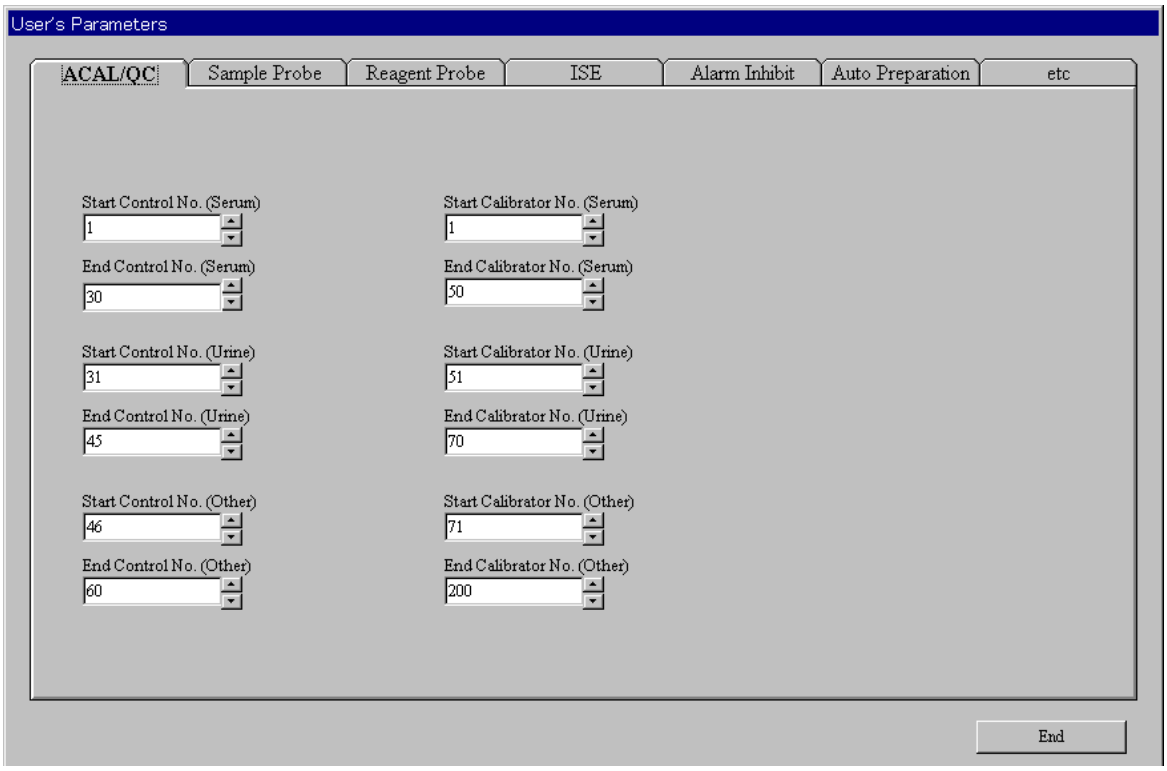
● Equipment Parameters



Equipment Parameters

Menu	Contents	Default
Sample Probe Adjustment	Correction pulse for S-probe rotate (-100 to 100) app. 0.4mm/ pulse	0
Reagent 1 Probe Adjustment	Correction pulse for R1-probe rotate (-100 to 100) app. 0.4mm/ pulse Not used	0
Reagent 2 Probe Adjustment	Correction pulse for R2-probe rotate (-100 to 100) app. 0.4mm/ pulse Not used	0

- User Parameters

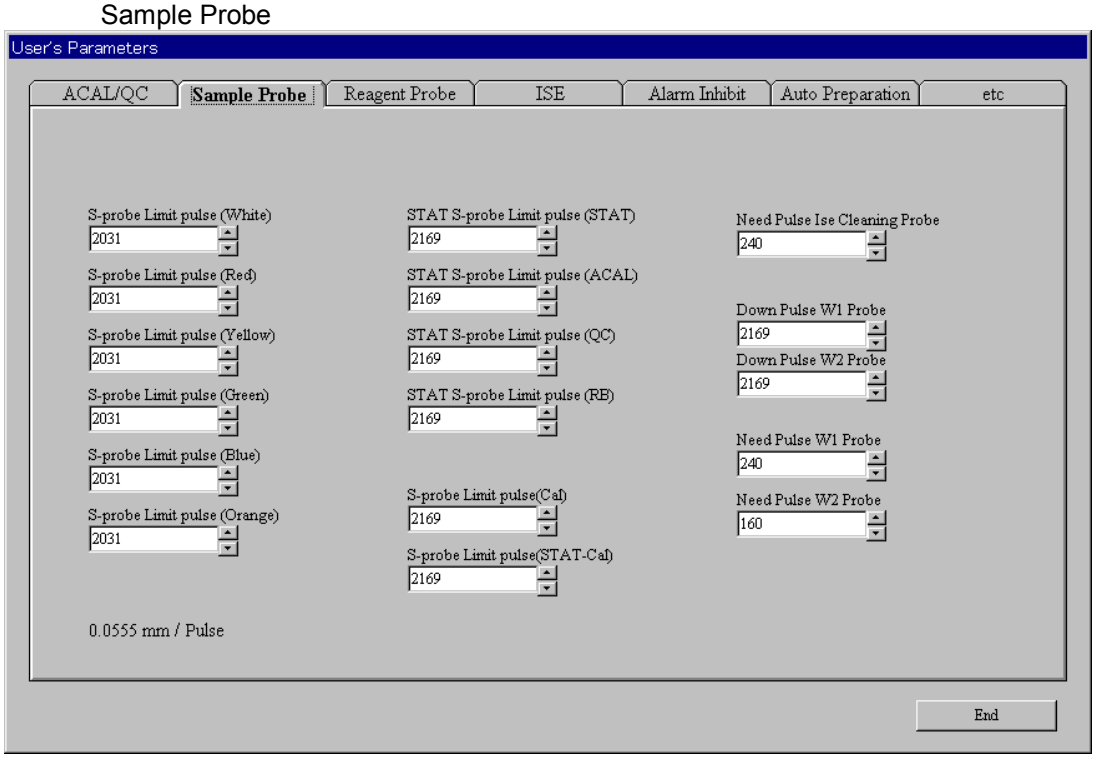


User Parameters
ACAL/QC

Menu	Contents	Default Setting
Start Control No. (Serum)	Set depending on the kind of sample and the quantity for sixty kinds of QC sample.	1
End Control No. (Serum)		40
Start Control No. (Urine)		41
End Control No. (Urine)		55
Start Control No. (Other)		56
End Control No. (Other)		60
Start Calibrator No. (Serum)	Set depending on the kinds of sample and the quantity for eighty kinds of ACL sample.	1
End Calibrator No. (Serum)		50
Start Calibrator No. (Urine)		51
End Calibrator No. (Urine)		70
Start Calibrator No. (Other)		71
End Calibrator No. (Other)		200

(Note) Set required value for each customer.

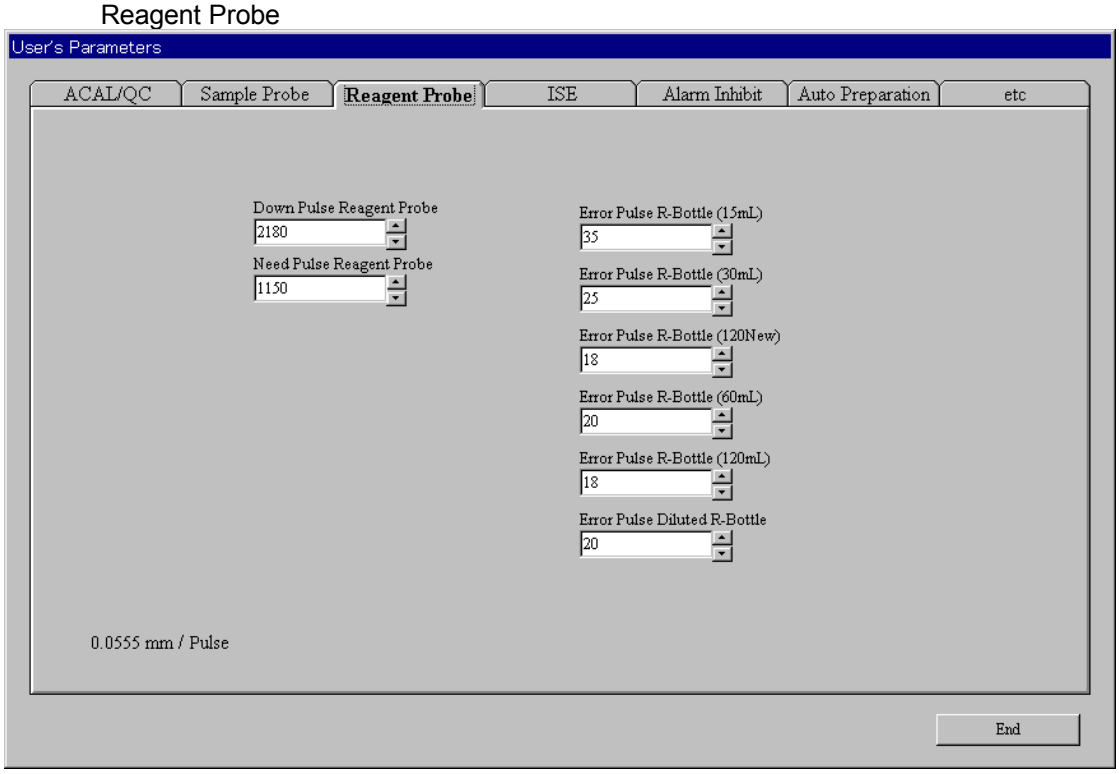
Sample Probe



Sample Probe

Menu	Contents	Default Setting
S-probe Limit pulse (White)	Sets the sample probe lower limit depending on the cups used in each rack	2031
S-probe Limit pulse (Red)		2031
S-probe Limit pulse (Yellow)		2031
S-probe Limit pulse (Green)	Sets the dead-volume	2031
S-probe Limit pulse (Blue)		2031
S-probe Limit pulse (Orange)		2031
STAT S-probe Limit pulse (STAT)		2169
STAT S-probe Limit pulse (ACAL)		2169
STAT S-probe Limit pulse (QC)		2169
STAT S-probe Limit pulse (RB)		2169
S-probe Limit pulse (Cal)	Not used	2169
S-probe Limit pulse (STAT-Cal)	Not used	2169
Pulse ISE Cleaning Probe Required	Set the minimum amount of detergent required to clean the ISE (From the limit pulse to the minimum required)	240
Down Pulse W1 Probe	Sets the sample probe lower limit at the W1 and W2 position	2169
Down Pulse W2 Probe	Sets the dead volume	2169
Need Pulse W1 Probe Required	Sets the minimum amount of detergent required for W1 and W2	240
Need Pulse W2 Probe Required	(From the limit pulse to the minimum required)	160

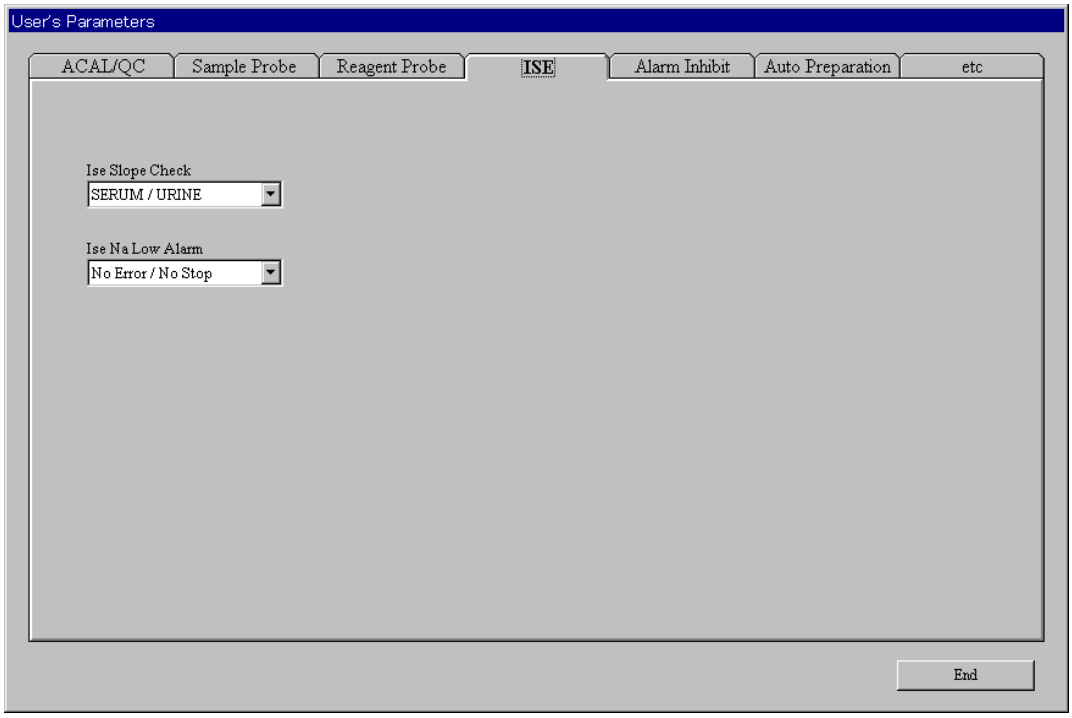
Reagent Probe



Reagent Probe

Menu	Contents	Default
Down Pulse Reagent Probe	Sets the sample probe lower limit depending on each position	2180
Need Pulse Reagent Probe	Needed Detergent value for W2 Sets the dead volume	1150
Error Pulse R-Bottle (15ml)	Min probe diving for 15ml bottle	35
Error Pulse R-Bottle (30ml)	Min probe diving for 30ml bottle	25
Error Pulse R-Bottle (120ml new)	Min probe diving for 40ml bottle	18
Error Pulse R-Bottle (60ml)	Min probe diving for 60ml bottle	20
Error Pulse R-Bottle (120ml)	Min probe diving for 80ml bottle	18
Error Pulse Diluted R-Bottle	Min probe diving for Diluent bottle	20

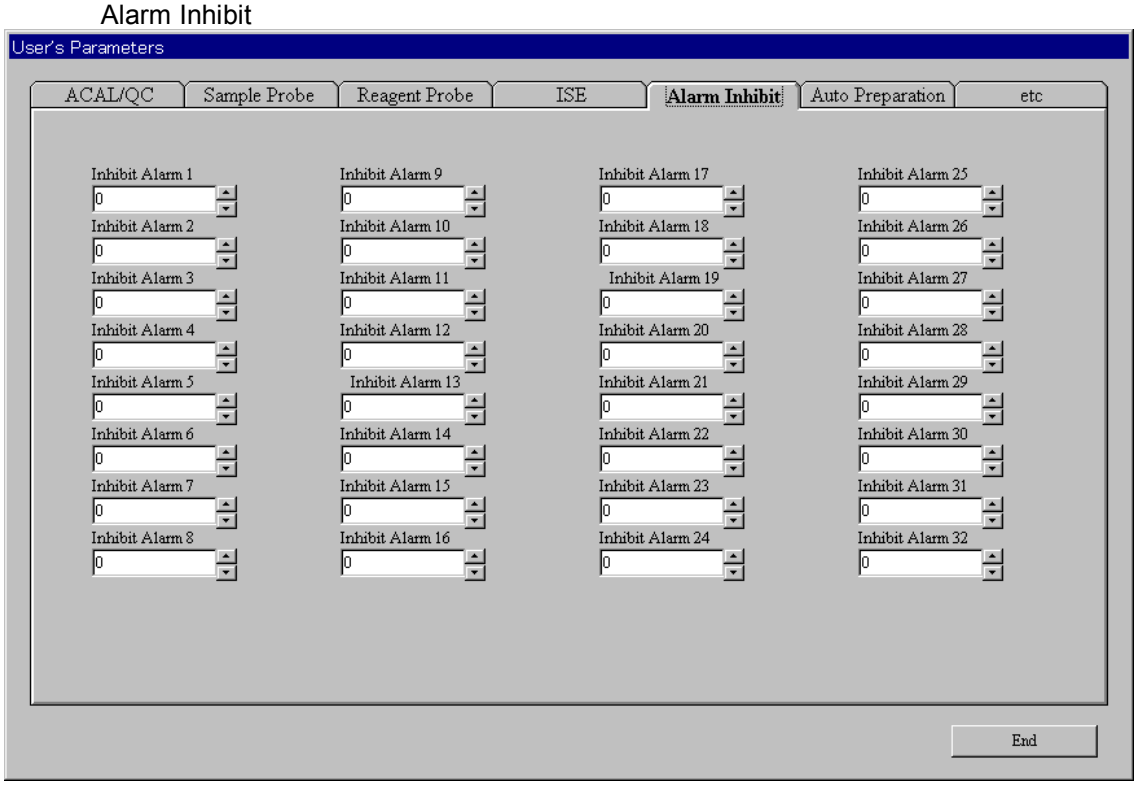
ISE



ISE

Menu	Contents	Default
ISE Slope Check	Sets whether ISE slope check is performed.	Serum / Urine
ISE Na Low Alarm	The Na data is low (less than 70) on three consecutive samples *No Error / No Stop *Error / Stop *Error / No Stop	No Error / No Stop

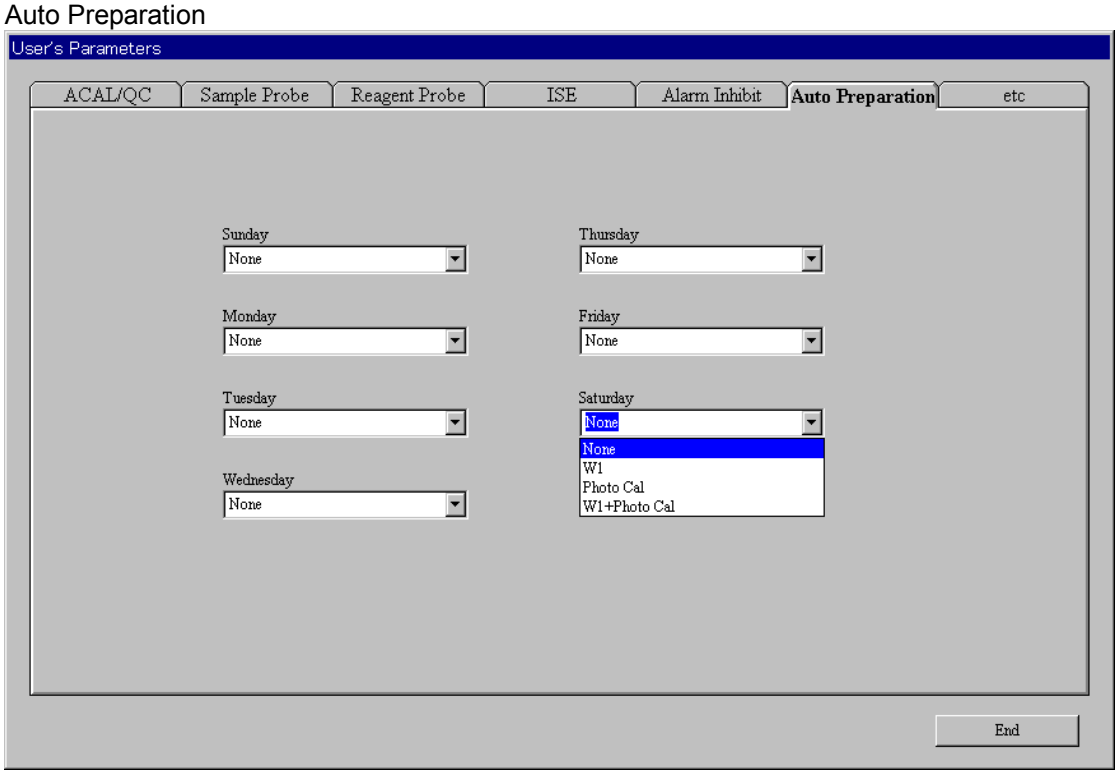
Alarm Inhibit



Turn Of Alarm

Menu	Contents	Default
Turns Of Alarms 1 to 32	Sets the numbers of the alarms to be turned of Not listed	

Auto Preparation

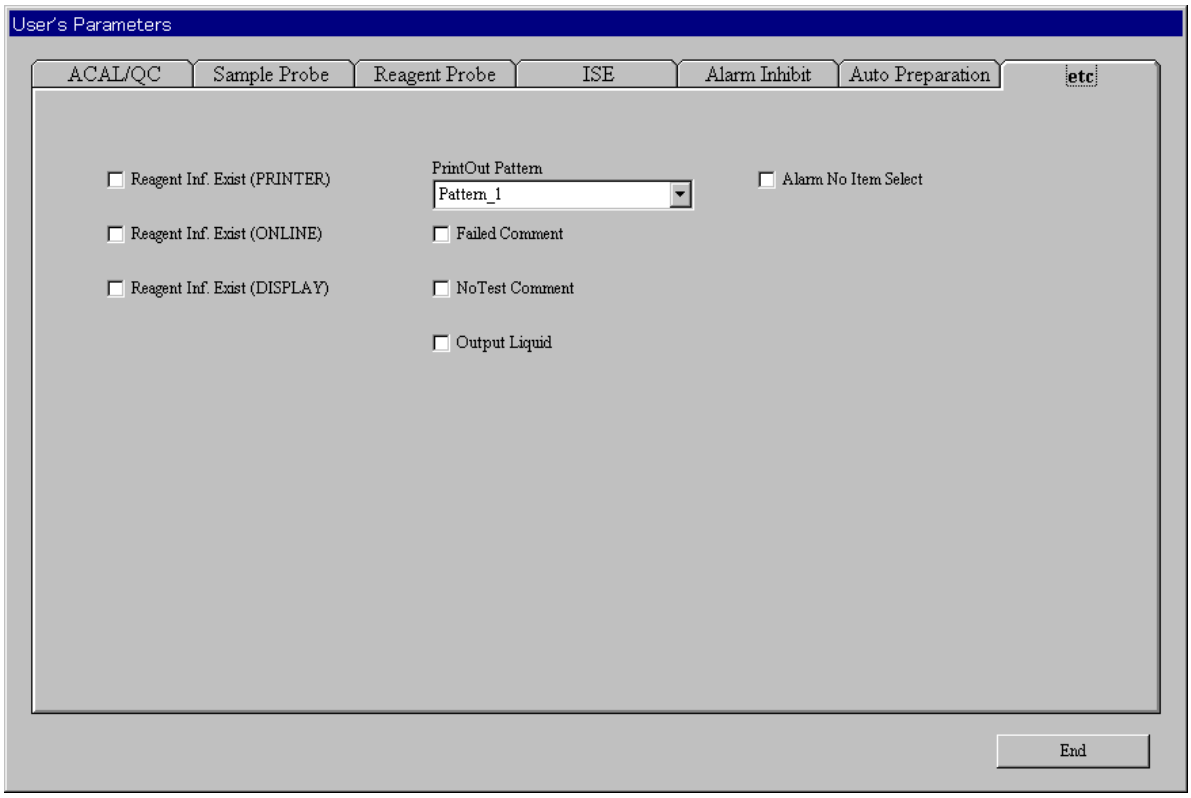


Menu outline

Setting of the auto preparation at the time of auto power on at each day of the week.

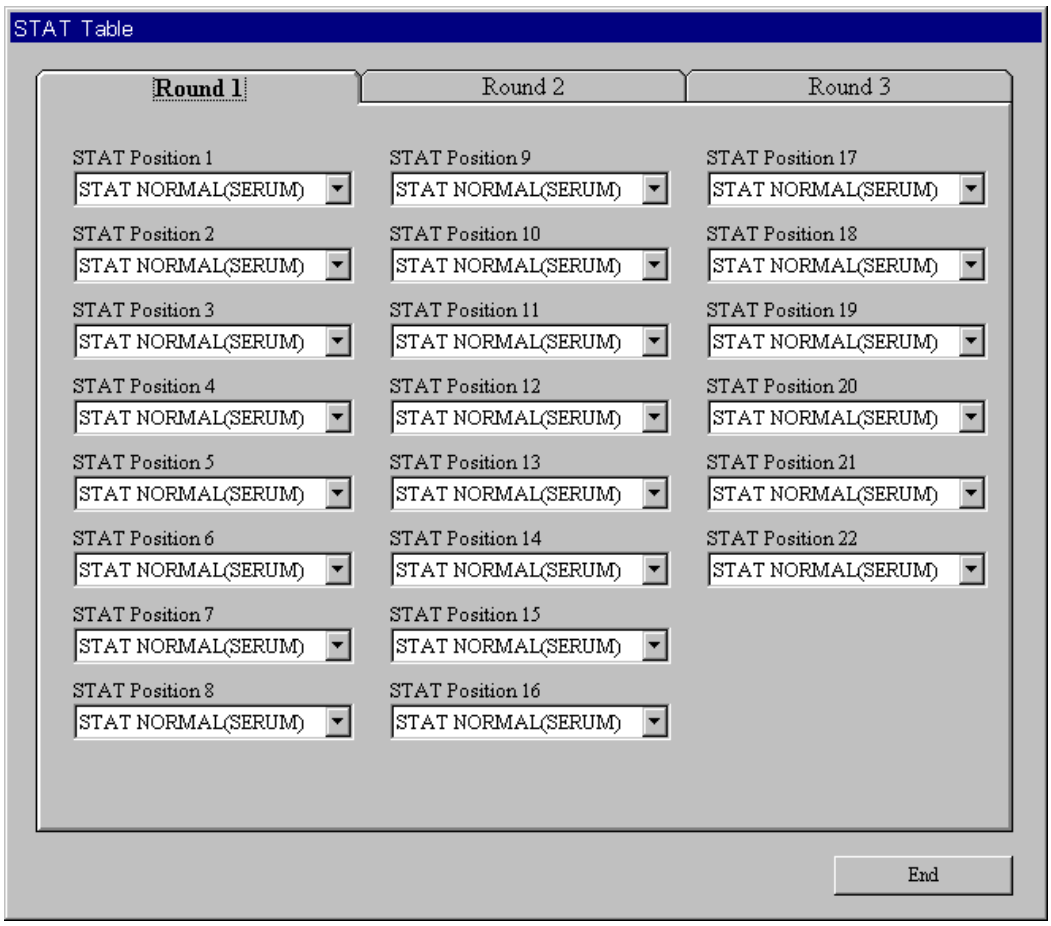
1: None
2: W1
3: Photo Cal
4: W1+Photo Cal

etc



Item	Outline	Default
Reagent Inf. Exist (PRINTER)	Yes = Reagent info. On Data log list	None
Reagent Inf. Exist (ONLINE)	Yes = Reagent info. On online data	None
Reagent Inf. Exist (DISPLAY)	Yes = Reagent info. On displayed data	None
Print Out Pattern	Pattern_1 = Data right side arraigned (As before) Pattern_2 = Data right side arraigned, separator between data and error flag (New format) Pattern_3 = Data left side arraigned, separator between QC data and error flag (New format)	Pattern_1
Failed Comment	Yes = Add comment on data log when calibration is failed.	None
No Test Comment	Yes = Add comment on data log when no measure even cup is detected.	None
Output Liquid	Yes = sample type is not printed on Data log.	None
Alarm No Item Select	Yes = Generate alarm when host send no requisition sample.	None

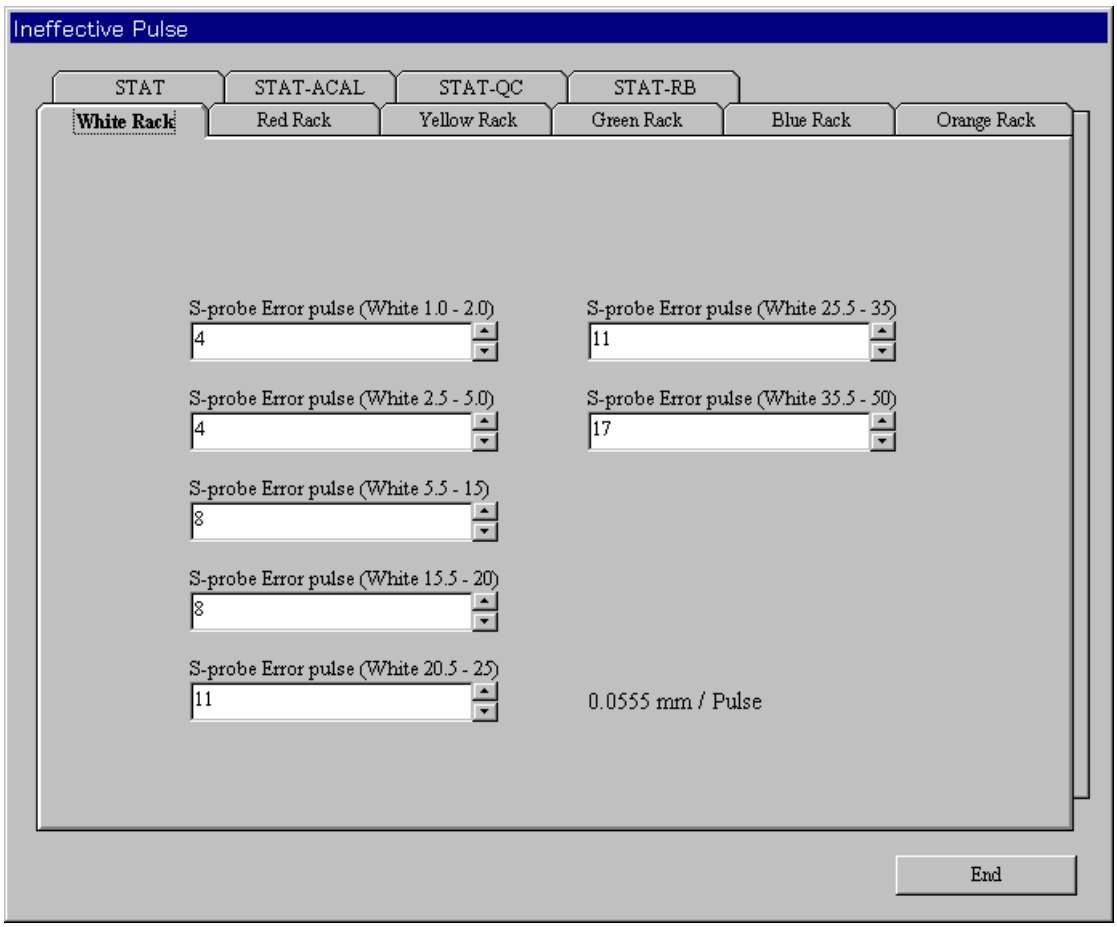
● STAT Table



STAT Table

Menu	Contents	Default
STAT Position 1 to 22	Sets the kind of sample for the twenty-two STAT positions STAT NORMAL (SERUM) STAT NORMAL (URINE) STAT NORMAL (OTHER) RB ACAL(Serum) ACAL(Urine) ACAL(Other) QC(Serum) QC(Urine) QC(Other)	STAT NORMAL (SERUM)

● Ineffective Pulse

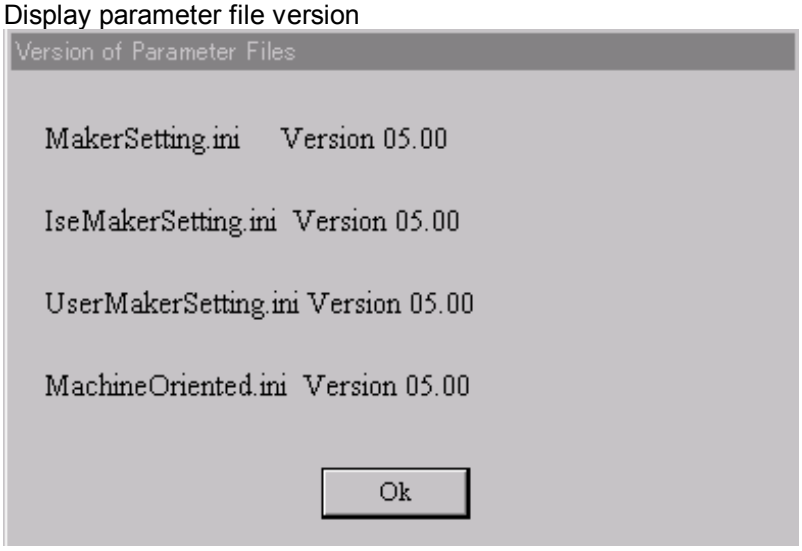


Ineffective Pulse White Rack to STAT RB

Menu	Contents	Default
S-Probe Error Pulse(xxxx 1.0 to 2.0)	Setting of the down stroke after level detection by the sample probe in regard to the sample dispensing volume for each rack.	4
S-Probe Error Pulse(xxxx 2.5 to 5.0)		4
S-Probe Error Pulse(xxxx 5.5 to 15)		8
S-Probe Error Pulse(xxxx 15.5 to 20)		8
S-Probe Error Pulse(xxxx 20.5 to 25)		11
S-Probe Error Pulse(xxxx 25.5 to 35)		11
S-Probe Error Pulse(xxxx 35.5 to 50)		17

● Version of Parameter files

Display parameter file version

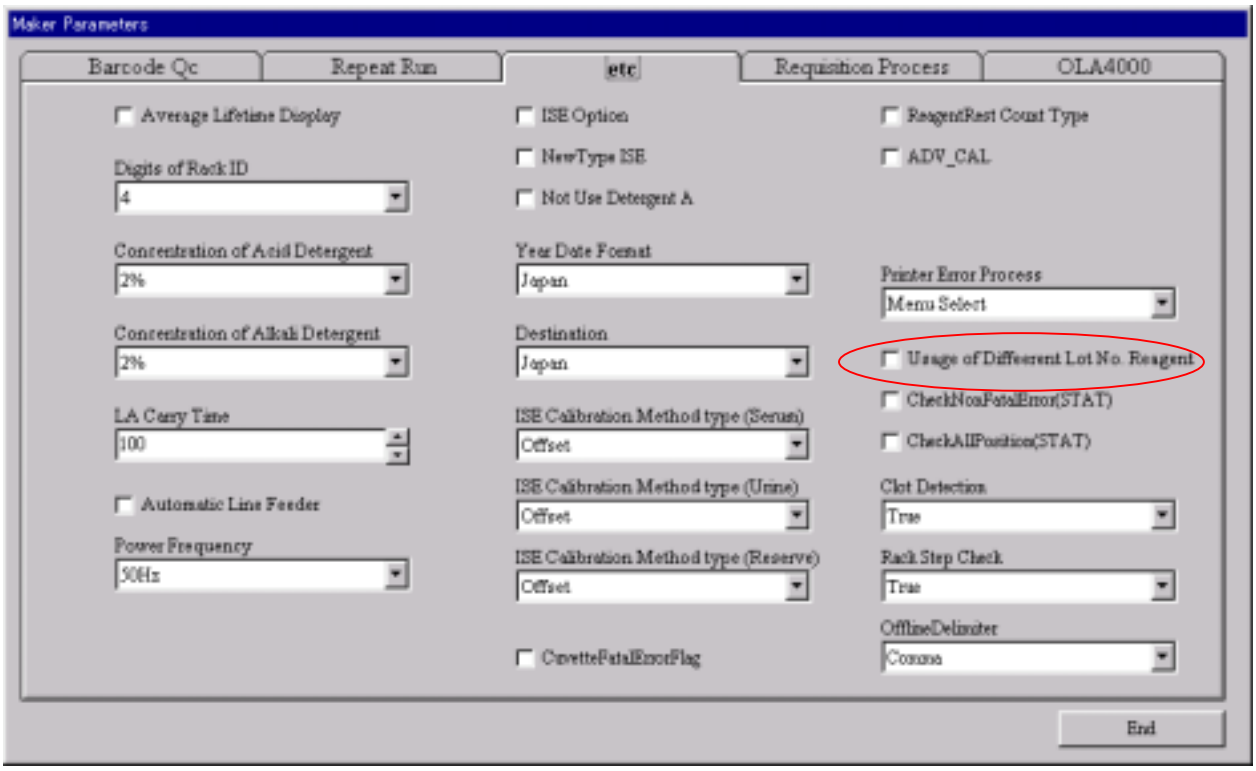


System Maintenance of Ver 5.0 is same with Ver 4.2 except the following point.

Usage of Different Lot No. Reagent (Eliminated on Ver 4.0 and recovered on Ver 5.0)

Need caution that the setting of this parameter is not taken over in the version up from Ver 4.0 and elder version.

- Maker Parameters



Menu	Contents	Default
Usage of Different Lot No. Reagent	If the lot No. is different when changing the reagent bottle, set “ Yes ” or “ No ” depending on whether the reagent should be dispensed Uncheck: (Continue) or Check: (Stop)	Uncheck

Refer to the menu of Ver 4.2 about the other parameters.

OLYMPUS

Rev.1300

AU640 Inspection Card

Customer	
Date	

Warranty(w/ wo), 6M/ 12M/ ( )	
Serial No.	
Counter No.	

Service Engineer Name

Unit	Inspection items	Contents	6M	12M	Remarks
AA	Air filter	Clean			
	DI water tank filter	Clean			ZM3079
	DI water tank	Clean			ZM3079
	Sample inner wash filter	Clean			
	Vacuum pump (Valve, Diagram)	Exchange	/		Every 2years MD2023, 2025
	Perister pump	Check			
	Tubing for wash line	Clean			Exchange probe and mix outer wash line if too dirty.
	Tubing for drain line	Clean			Pinch drain tube by SKB. Fill sodium-hypochlorite. Wait for more than 30min. Remove SKB to waste. Perform line prime.
	Wash ports	Clean			
	Power Supply	Clean			Remove dust
CA, CB, CC, CD, CE, CH,	Bar code reader	Clean	/		Don't touch to Mirror
	Feed plate tension	Check	/		
	Feed plate stop position	Check			
	Slide plate	Clean			CA, CC unit
	Base plate at feed plate	Check	/		Clean and oil with photelube.
	Rack base plate	Clean			CD unit
	Slide pack	Oil			
	Rack transfer function	Check			

Unit	Inspection items	Contents	6M	12M	Remarks
DA, DC	Container	Clean			
	Bar code reader window	Clean			
EC	Syringe	Check			Check leaking.
	LM guide/ Cam	Oil	/		AFC Grease/ Losoid72515
FA, FD	Probe position	Check			
	Change nut Linear bush/ Ball spline Thrust bearing	Clean / oil			AFC Grease(OT3364) AFB Grease (ME5525) None caster spray oil(MF0316)
	Horizontal turn belt tension	Check			
FB	Nozzle	Clean			Mandlin line
	Nozzle position	Check			
	Terminal packing	Check			
FC	Mix bar	Clean			Ether and Alcohol
	Mix bar Position	Check			
GA	Cuvette	Clean			
	Photocal	Check			Mean value range 0.03
	Coolant volume	Check			
SA	Syringe	Check			Check leaking
	Guide	Oil	/		Losoid72515
General	Performance check	Check			
	Data check	Check			

(Check method) Exchange: X, Clean: C, Adjust: A, Oil: O, Repair: S, Check OK: V

Renewed: June 9, 2003

OLYMPUS

revision 1100

AU640-ISE inspection card

page 1/1

Customer name:

Inspection date:

Inspection

B. No.

Counter No.

Inspector	

Part	Item	Check contents	6 M	12 M	Remarks
AA body part	Dilution pot	Clean			Sodium hypocrite solution with an effective chlorine concentration of 0.5% (1) Remove the dilution pot and immerse for 30 min in the above solution. (2) Remove the dilution pot from the solution and wash it with water. (3) Use a syringe or similar to dispense water from the outlet side of the dilution pot.
	Nozzle dispensing position	Confirm			
	Drain cylinder	Clean			Sodium hypocrite solution with an effective chlorine concentration of 0.5% (1) Dispense 500 ml of the above solution to the drain cylinder. (2) Dispense 1.5 liters of water into the drain cylinder (3) Wash the infusion tube with water. (4) Wipe the circumference of the drain cylinder with water.
	Electrode part [Do not immerse the electrode into the solution.]	Clean			(1) Remove the REF electrode from the OUT side (made of plastic) of the electrode part. (2) Clear the flow passage on the OUT side (made of plastic) of the electrode part with stylus wire (3) Clear the flow passage on the IN side (made of stainless steel) of the electrode part with stylus wire.
	Piping at electrode (Drain tube)	Exchange			Order No. MU8304, MU8305
	(Bypass tube)	Exchange			Order No. MU5386
	(Perister tube)	Exchange			Order No. MU9623
	(Waste tube)	Exchange			Order No. MU8247
	(Pinch tube)	Exchange			Order No. ZM2970

Part	Item	Check contents	6 M	12 M	Remarks
SA	Syringes	Confirm			Check for leakage.
Overall	Calibration values (before the inspection)	Confirm			Standard Na = 38 to 68 mV/dec K = 38 to 68 mV/dec Cl = -38 to -68 mV/dec
	Execution of automatic cleaning	Clean			Perform [System status -> ISE status -> Individual operation start -> Cleaning].
	Calibration values (after the inspection)	Confirm			Na = K = Cl =
	Analysis data confirmation	Confirmation			N = 20 (reproducibility)

Exchange: x, clean: C, adjustment: A, lubrication: O, repair: S, normal: V

Renewed: August 5, 2002

■ AU640

● Inspection types

: Inspections every 6 months
: Inspections every 12 months
* Refer to the separate inspection cards for the inspection contents.

● Inspection exchange parts

: Inspections every 6 months	None
: Inspections every 12 months	(Vacuum pump) MD2023 (diaphragm)/unit (once / 2 years) MD2025 (valve)/unit (once / 2 years)

● Inspection manhours

: Inspections every 6 months	3 manhours
: Inspections every 12 months	5 manhours

● Inspection tools

: Used grease:	ME5525 (AFB grease, 70 g)- Spline/ linear shaft for FA/ FD. ~~ZM0073 (photolube)~~ -> OT3364(AFC grease) - Change nut, EC LM guide. MF0316 (None caster spray oil) - Thrust bearing. Losoid 72515 – SA guide etc.

⚠ Caution

1. At the time of repairs involving the handling of AFB grease, observe the caution items on the grease for the work.
2. At the time of inspection, use rubber gloves so as not to touch the grease directly.

■ AU640 (ISE unit)

● Inspection types

: Inspections every 6 months
: Inspections every 12 months
* Refer to the separate inspection cards for the inspection contents.

● Inspection exchange parts

: Inspections every 6 months	None
: Inspections every 12 months	MU5386 (tube assembly), once every year

● Inspection manhours

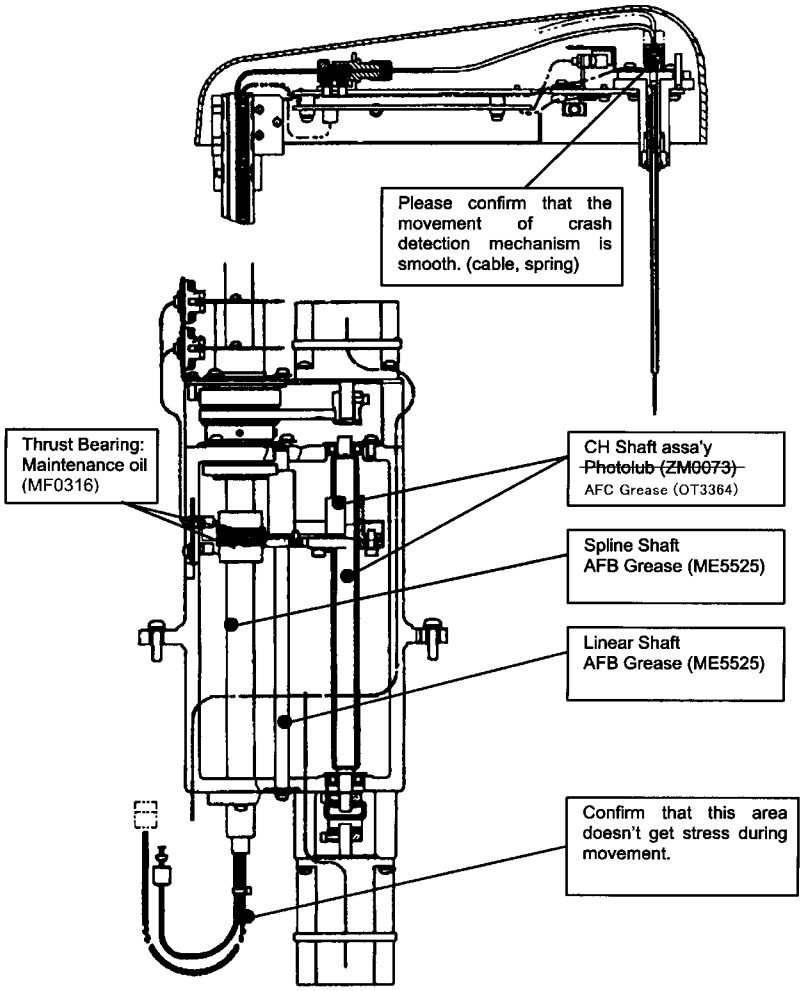
: Inspections every 6 months	1 manhours
: Inspections every 12 months	1 manhours

● Inspection tools

: No special

Explanation for the grease for each area

Please use greases as bellow and please confirm the points mentioned.

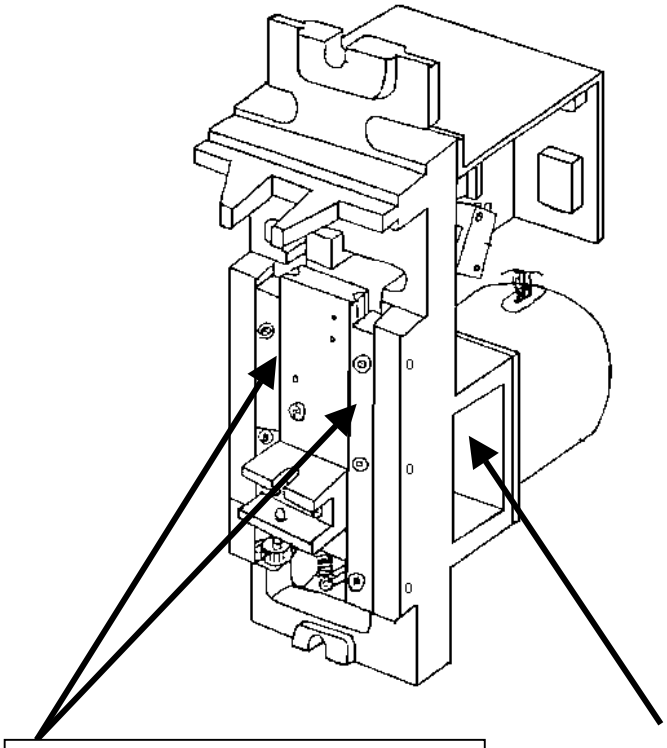

Please confirm that the movement of crash detection mechanism is smooth. (cable, spring)
Thrust Bearing: Maintenance oil (MF0316)
CH Shaft assa'y
~~Photolub (ZM0073)~~
AFC Grease (OT3364)
Spline Shaft
AFB Grease (ME5525)
Linear Shaft
AFB Grease (ME5525)
Confirm that this area doesn't get stress during movement.

SA Grease up

Grease Losoid 72515 on SA guide at regular maintenance (Once per year).
No need to dismount SA from frame.

1. Clean the guide by alcohol to remove dust and dirt.
2. Make the guide up-down and grease Losoid72515 by brush at rail.
3. Make the guide up-down more than 10 times to be entered.
4. Wipe the remaining grease.

When needed for maintenance on rack and pinion, clean their and grease Losoid 72515.

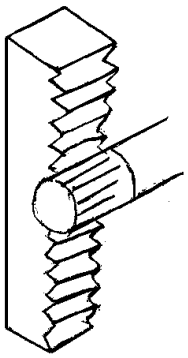


Order Number for
Losoid 72515
(Maker Losimol)

OT2007 (1kg)
OT2008 (50g)

Guide: Once/ year

Grease with Losoid 72515



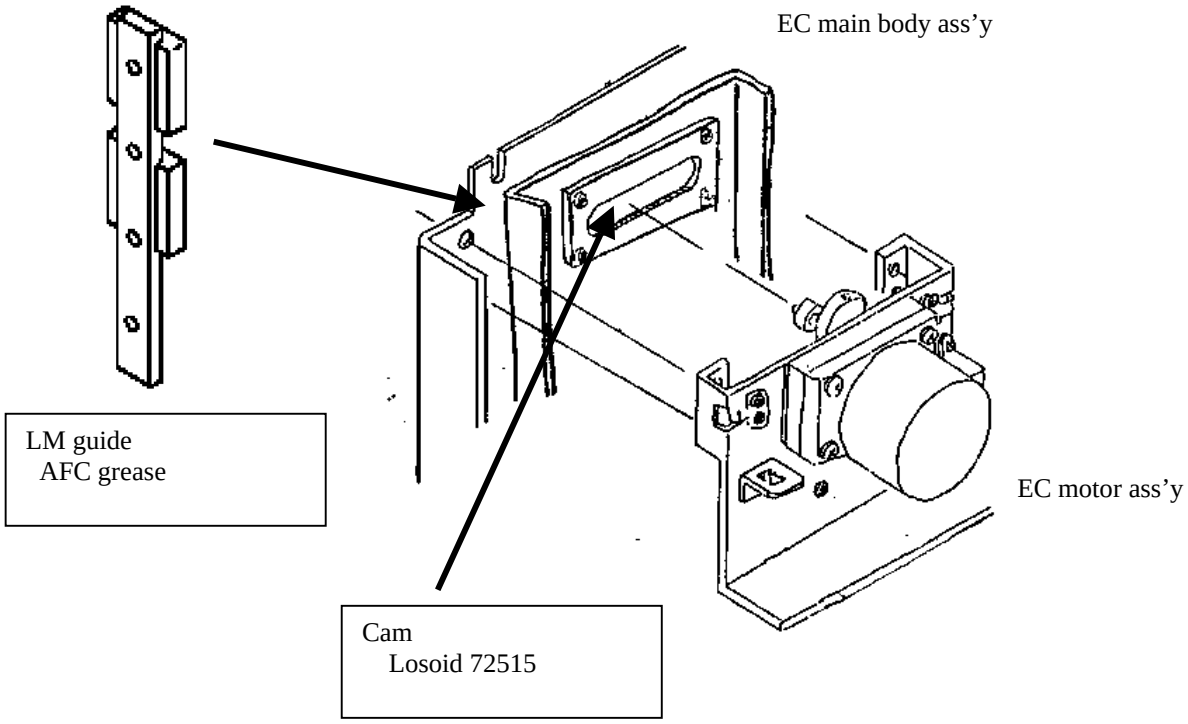
Rack & Pinion: When needed

Grease with Losoid 72515

EC Grease up

Grease AFC to EC LM guide (Once/ year).
Grease Losoid 72515 to EC cam (Once/ year).

1. Dismount EC unit.
2. Clean LM guide and cam.
3. Grease LM guide and cam.



ENGINEERING CHANGE NOTICE (☒English / ☒Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No.:	REV.	PAGE
AU640	Alterations to the REP of the GA unit	☐ DCN ☒ TCN	ECR No.: CMN No.:	A	01/06

DATE :	ISSUED BY :	APP.	CHK.	DSGN.
Jul. 12, 1999	PRODUCT DESIGN GROUP MISHIMA OLYMPUS CO., LTD.	A. Toyama	T. Toyama	Y. Mochizuki

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE EC No.:	DOCUMENT TO BE REFERRED :
☐ ALL ☐ PART OF "SHIPPED" ☒ FROM NEXT SHIPMENT (# ,TIME From Jul.'99)	☒ PERMANENT ☐ TEMPORARY UP TO ☐ SPECIAL		

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB	DF	UP	DW	NO
M521-ANL11	MU5442	B2	B2	constant	MU5533	MU5534	A	A		○				○	
M521-ANL21	MU5443	B2	B2	temp. bath											
				constant	MU6173	MU6174	---	A		○				○	
				temp. bath											

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US :USABLE AB :ABANDON
RP :REPAIRABLE DF :DEFER

1. Reasons of change
2. Contents of change
3. List of articles for modification
4. List of jigs, tools, inspection apparatus for modification
5. Modification method & work load
6. List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐Yes ☒No)

If Yes, provide explanation:

PROCEDURAL AND OPERATIONAL CHANGES (Any procedural or operational changes? ☐Yes ☒No)

If Yes, provide description:

LABELING CHANGES (Any changes to Service or Technical documentation? ☐Yes ☐No)

If Yes, provide information:

*To : Technical Service Department(OT) Please fill in this space.

EC NO.	PAGE
521- 40	02/06

1.Reasons of change

We have received a request asking some alterations to the REP of the GA unit of the AU640 from the R&D department.

2.Contents of change

The new REP MU5533 has got the gear assy., without the PDA assy. and the thermistor assy. The MU5533 is used for the M521-GA01. For the M521-GA11, MU6173 has been added to the REP. The general structure of the MU6173 is the same as the MU5533. The MU5533 and the MU6173 do not have their version number. Therefore, the MU5533 is included in the version number control of the MU5458(M521-GA01), and the MU6173 is included in the version number control of the MU5459(M521-GA11).

3.List of articles for modification

		qty.
MU5534	constant temperature bath(for the M521-GA01)	1
MU6174	constant temperature bath(for the M521-GA11)	1

4.List of jigs,tools,inspection apparatus for modification

JC14-M520-GA01-MV1006(the jig for adjusting the distance of the light)
JC08-M520-GA01-MD7194(the jig for positioning the cuvette wheel)
Standard tools

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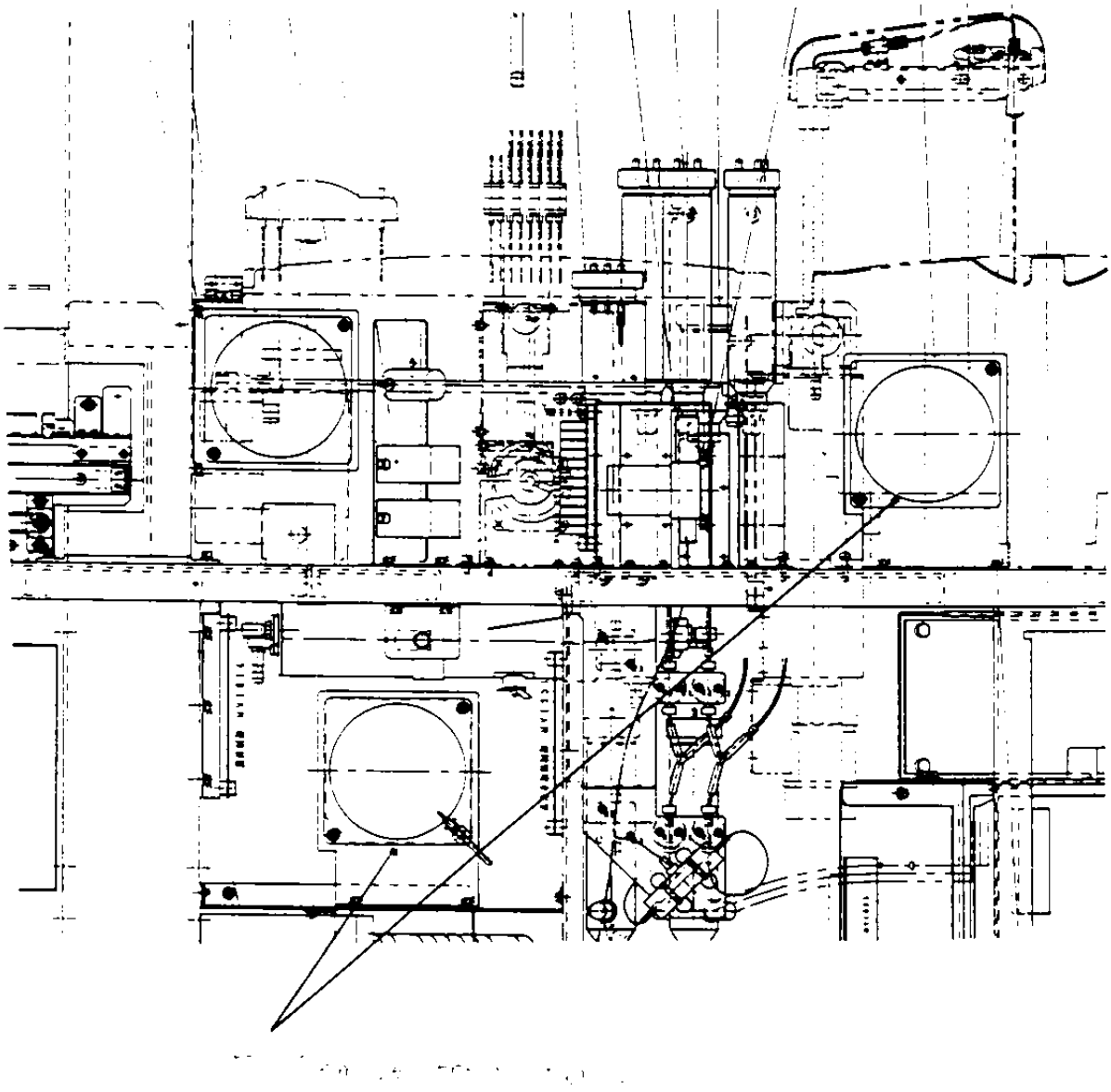
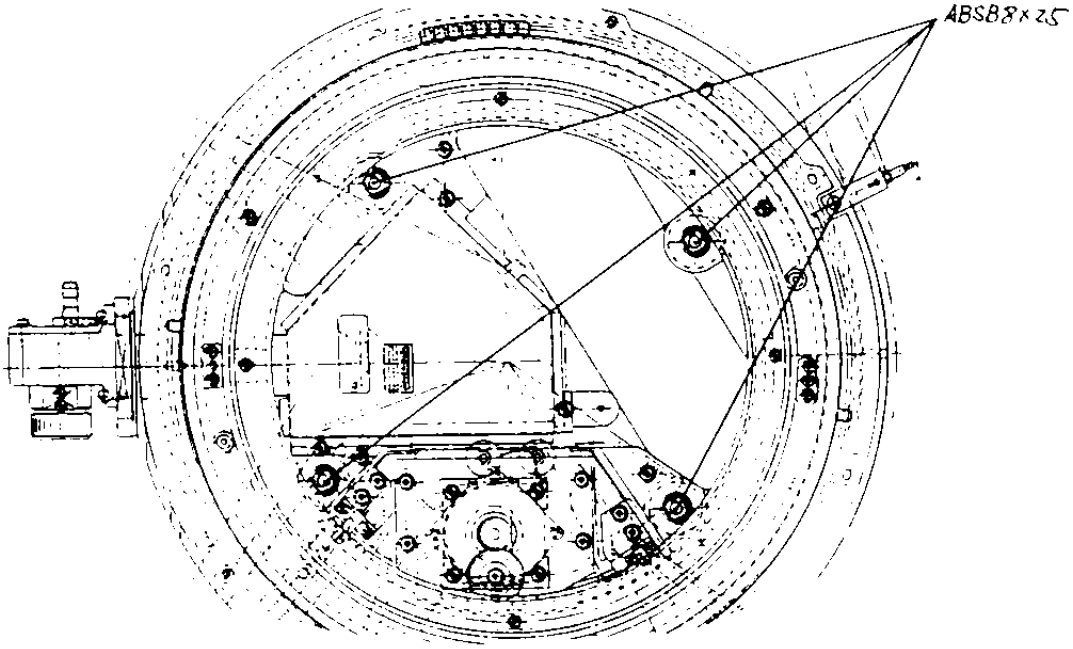
521- 40	03/06

5.Modification method & Work load

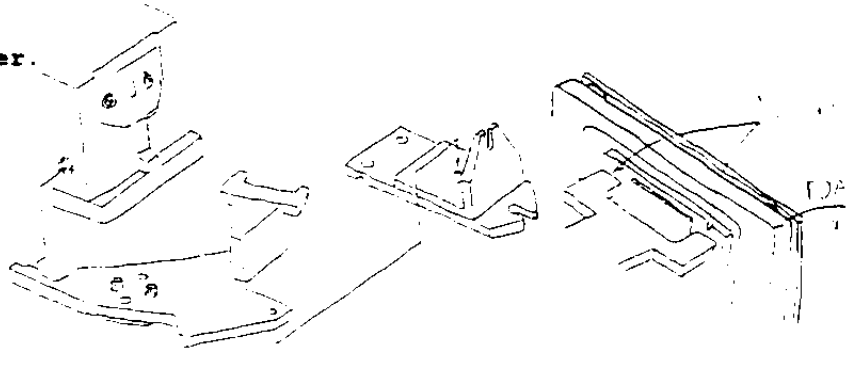
1) Power the instrument off.
2) Remove the mix bars, the S probe, the R probe and the FB nozzle assy.
3) Remove the covers around the GA unit, and the cover F.
4) Put a square container under the mouthpiece of the coolant drain, that is at the back of the analyzer. Remove the cap of the mouthpiece of the coolant drain, and remove the cap of the mouth for filling the coolant, then drain the coolant from the analyzer.
5) Remove the fan under the FA and the fan under the FD01.
6) Remove the FA and the FD01 unit from the frame.



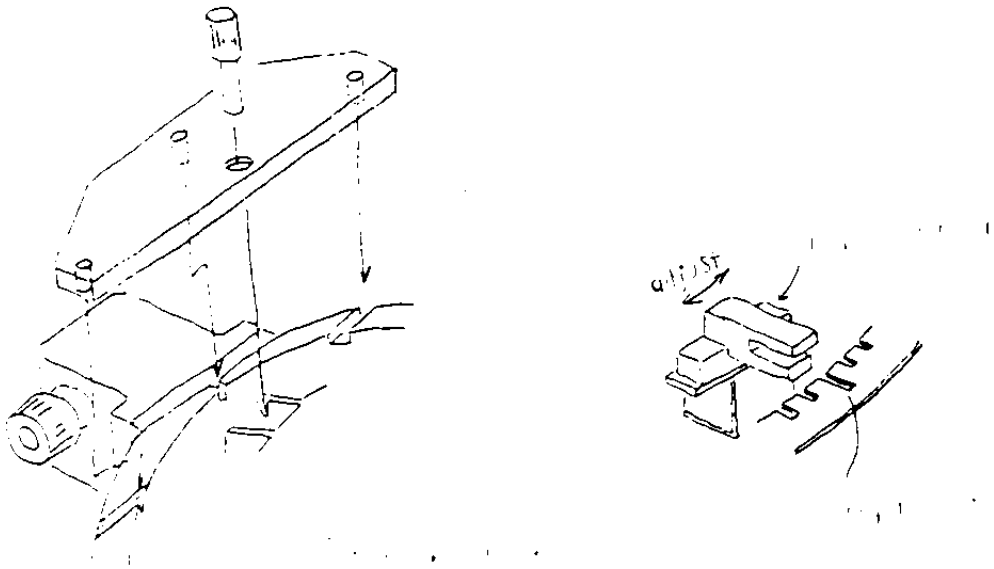
7) After the coolant drained completely, disconnect the GA tubes of the constant temp. bath and connect each of them to each of the tubes of the new REP constant temp. bath one by one. This is to prevent the rest of the coolant from spilling out when removing the constant temp. bath from the frame.
8) Unscrew the fixing screws of the plate under the lamp house(the terminal part), and slide the plate outward.
9) Remove the GA control P.C.B. assy.(MV1005).
10) Unscrew the four fixing screw of the constant temp. bath(ABSB8×25), then remove the constant temp. bath from the frame.
(The feet of the GA are on the frame.)
* If the ISE is equipped with the analyzer, loosen the ISE fixing screws and slide the whole part of the ISE outward a little.



11) Put the new REP constant temp. bath on the frame and secure it with the 4 fixing screws(ABSB8×25).
* The AU640 and the AU600 share the REP constant temp. bath with each other.
There are two holes for the positioning pin of the GA cover.
The hole close to the thermistor assy. is for the GA cover of the AU640.
The hole at the left of the AU640 hole is for the GA cover of the AU600.
12) Connect the GA tubes of the REP constant temp. bath to the tubes around the GA unit.
13) Apply *heatsinker*(white silicone) to the thermistor assy. and attach it to the GA.
14) Remove the pentagon cover of the GR part, set the jig JC14-M520-GA01-MV1006, and attach the PDA assy.
15) Put back the pentagon cover.



16) Set the cuvette wheel on the GA.
17) Make sure that the cap of the coolant drain is fit, then pour the coolant.
18) Put back the units and the assemblies that were removed in the previous steps.
19) Power the instrument on.
20) Add the coolant to the analyzer.
21) Place the analyzer in the maintenance mode.
22) Remove four cuvettes from the cuvette wheel: the cuvette at the origin point, and three cuvettes in every 38 cuvettes in the CCW direction.
23) Remove the jig pin and set the jig JC08-M520-GA01-MD7194.
24) Run the initialization and make sure that the origin point is correct by dropping the jig pin. The jig pin has to drop smoothly.
25) Turn the cuvette wheel by 38 cuvettes in the CCW direction, and make sure that the 38th cuvette position is correct by dropping the jig pin.
26) Turn the cuvette wheel by 38 cuvettes in the CCW direction further, and make sure that the 76th cuvette position is correct by dropping the jig pin.
27) Turn the cuvette wheel by 38 cuvettes in the CCW direction further, and make sure that the 114th cuvette position is correct by dropping the jig pin.



< If the origin point shifted, apply the steps below before proceeding step 28)>
1) Adjust the orign sensor so that the jig pin smoothly drops in step 23)-26).
2) Run the initialization.
3) Vidually position the stop sensor so that the slit of the wheel is in the middle of the sensor, then fix the sensor temporarily.
4) Select the 1 pulse movement in the DIAG menu to forward the cuvette in the CCW direction. Count the pulses to check when the LED turns OFF from ON. 10 or more pulses are required.
5) Run the initiallization.
6) Select the 1 pulse movement in the DIAG menu to forward the cuvette in the CW direction. Count the pulses to check when the LED turns OFF from ON. 10 or more pulses are required.
7) Secure the stop sensor.
8) Since the GA has been adjusted, check related units around the GA.

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28) Set the cuvettes to the cuvette wheel.
29) Put back the covers.
30) Perform a photo calibration and make sure that no errors arise, then update the value.
31) Measure the reagent blank values.
32) Since the GA has been replaced with the new one, check the constants of the analyzer. If the values differ from the standard, correct them.

Work load: 3.5 H for modification to the hardware and for photo calibration

ENGINEERING CHANGE NOTICE (☒English / ☒Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No.:	REV.	PAGE
AU640	Preventive action for rust on the bearing of the DA01	☒ DCN ☐ TCN	521-106	A	01/06

DATE :	ISSUED BY :		
Mar. 12, 2001	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO.,LTD.	APP.	Toshiaki Banno
		APP.	A. Toyama
		CHK.	K. Yoshimuri
		DSGN.	T. Mochizuki

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE EC No.:	DOCUMENT TO BE REFERRED :
☐ ALL ☐ PART OF "SHIPPED"	☒ PERMANENT		
☒ FROM NEXT SHIPMENT	☐ TEMPORARY UP TO	RISK ANALYSIS (☒Yes ☐No)	CLAIM CARD TO BE REFERRED :
(# produced from Mar. 2001)	☐ SPECIAL		

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB		UP	DW	NO
M521-ANL11	MU5442	C7	C8	M521-DA01	MU5460	MU6424	05C	06D		NEW					
M521-ANL21	MU5443	C7	C8	514 PM assy.	MU4979	MU4979	A	A	--	--	--	--		○	

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US :USABLE AB :ABANDON
RP :REPAIR

1.Reasons of change
2.Contents of change
3.List of articles for modification
4.List of jigs, tools, inspection apparatus for modification
5.Modification method & work load
6.List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐Yes ☒No)

If Yes, provide explanation:

PROCEDURAL AND OPERATIONAL CHANGES (Any procedural or operational changes? ☐Yes ☒No)

If Yes, provide description:

LABELING CHANGES (Any changes to Service or Technical documentation? ☒Yes ☐No)

If Yes, provide information:
Service manual will be revised in the next version (within 6 months)

*To : Technical Service Department(OT) Please fill in this space.

ENGINEERING CHANGE NOTICE

EC NO.	PAGE
521-106	02/06

1.Reasons of change

The bearings in the DA unit failed to rotate properly on an AU600, that are being used for more than 2 years. The bearings had rust, and this caused its malfunction. It has been decided to take a preventive action for rust to the AU640 and to the AU400.

2.Contents of change

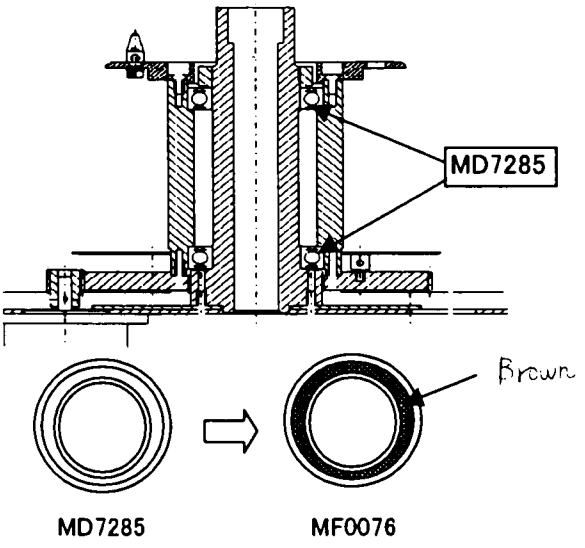
Replacement of the bearing (MD7285)→(MF0076)

The MD7285 has steel on its both sides.

The new bearing (MF0076) has rubber on its both sides.

Replacement of the drive motor (MU2912)→(MU4979)

The drive motor (MU2912) is replaced with the MU4979, that has been used for the AU400. This is because the sliding resistance will increase with the new bearings.

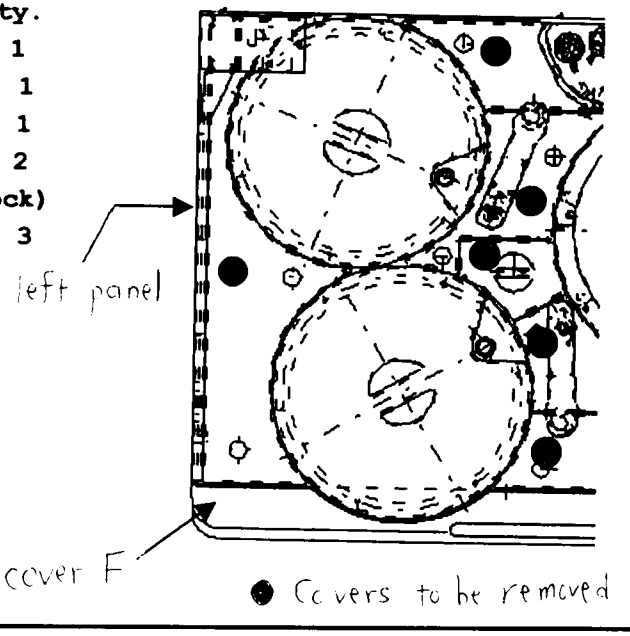


3.List of articles for modification

MU6424 M521-DA01

4.List of jigs,tools,inspection apparatus for modification

	qty.
Positioning film (JC16-M520-AA01-ME4148)	1
Square container for catching the coolant	1
Magnet (DY2013)	1
Lifelon tube 12×18×300	2
(One of the tubes can be used with MD2316 cock)	
Lifelon tube 12×18×arbitrary length	3
Seal tape, Vinyl tape, KE45T,	
Syringe for sucking coolant	

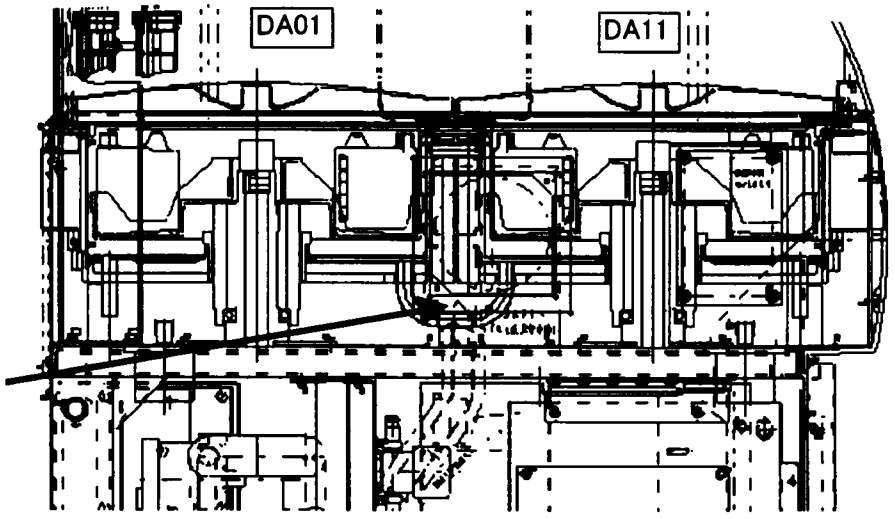


5.Modification method & Work load

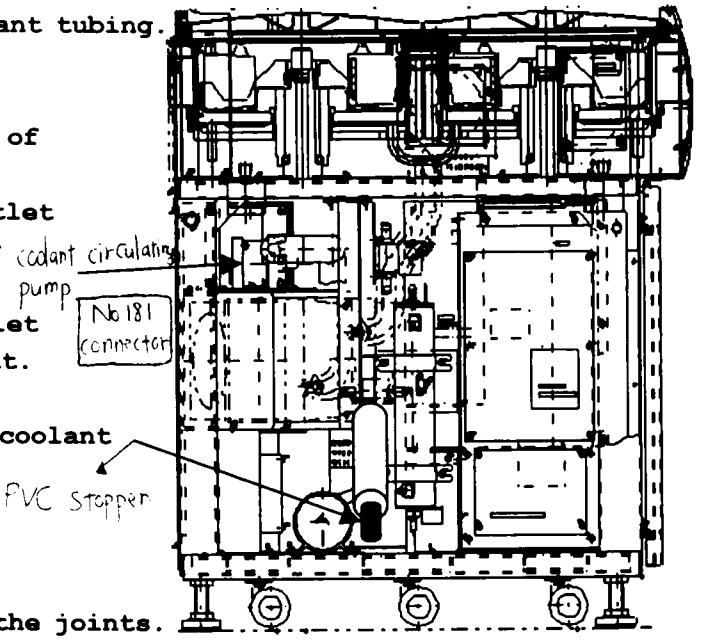
Procedure for replacing the DA unit

1) Turn off the AU640.
2) Remove the left panel, the cover F and the covers around the DA01 and the DA11.

3) Remove the fan assy. at the left of the DA01 and the DA11.



4) Release the coolant from the DA coolant tubing.
The DA01 and the DA11 each has the inlet of the coolant.
Remove the plugs (MD7293) from both of the inlets of the coolant.
Put a square container under the outlet of the coolant, that is in the lower left part of the analyzer.
Remove the PVC stopper from the outlet of the coolant to release the coolant.
Make sure to fit the PVC stopper to the outlet of the coolant after the coolant is removed.



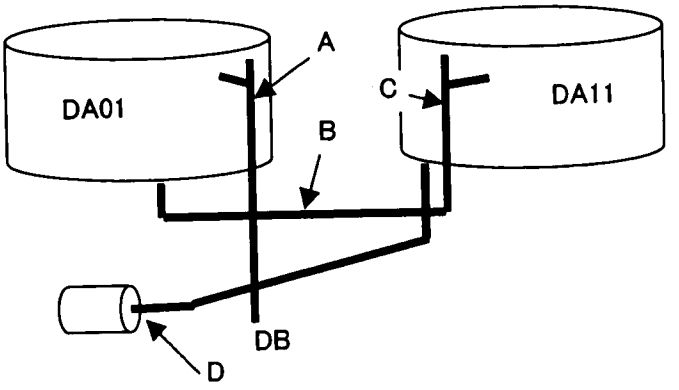
5) Disconnect the DA coolant tubing at the joints.
The tubing has joints at the places where the arrows "A", "B", "C" and "D" indicate in the figure below.
Remove the heat insulator round each of the joints, then disconnect the joints from each other.

When replacing the DA01, disconnect the joints "A", "B".

When replacing the DA11, disconnect the joints "C", "D".

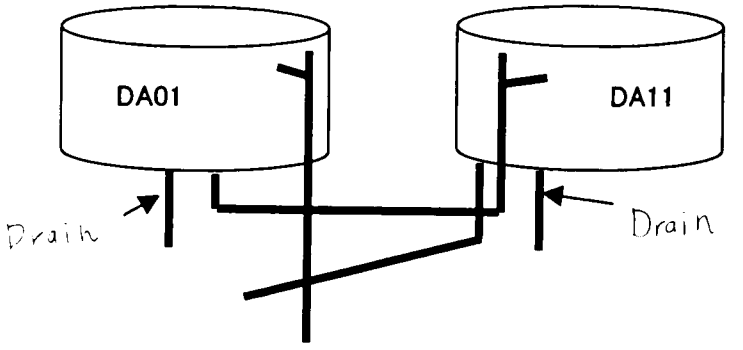
For A, C : Block the edge of the tubing, that is attached to the unit.

For B, D : Block both of the edges.



Block the disconnected places of the DA coolant tubing with Lifelon tubes (12×18× arbitrary length): fold over one end of the Lifelon tube and bind it with a SKB, then fit the other end of the tube onto the disconnected places as indicated above.
This is to prevent the remaining of the coolant from spilling into the analyzer when removing the DA01 or DA11 from the analyzer.

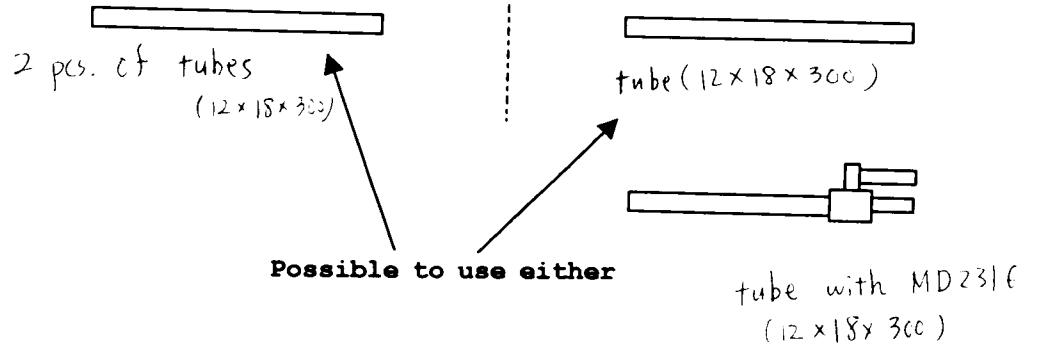
6) Disconnect the drain tubing at the joint appox. 5 cm under the bottom of the DA unit.

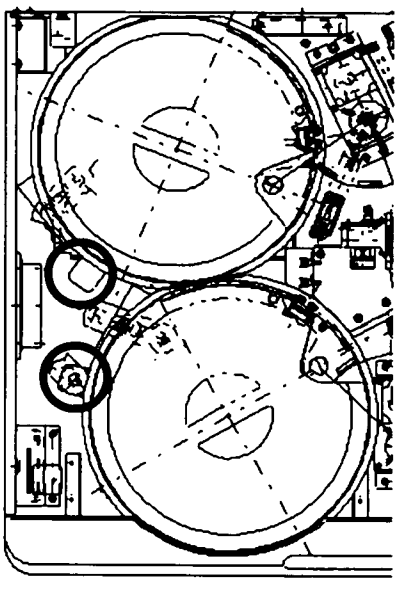


7) Disconnect the wiring of the DA unit.
Unscrew the fixing screws, then remove the DA unit from the analyzer.

8) Mount the new DA unit on the analyzer and tighten the fixing screws.
* Connect the wiring, and connect the drain tubing to the new DA unit by reversing the removal procedure. (step 6,7).
* Join the disconnected places of the DA coolant tubing, then cover each of the joints with the removed heat insulators and vinyl tape.
If the tubing or its metal is left uncovered, condensation will occur and drops may fall in the analyzer.

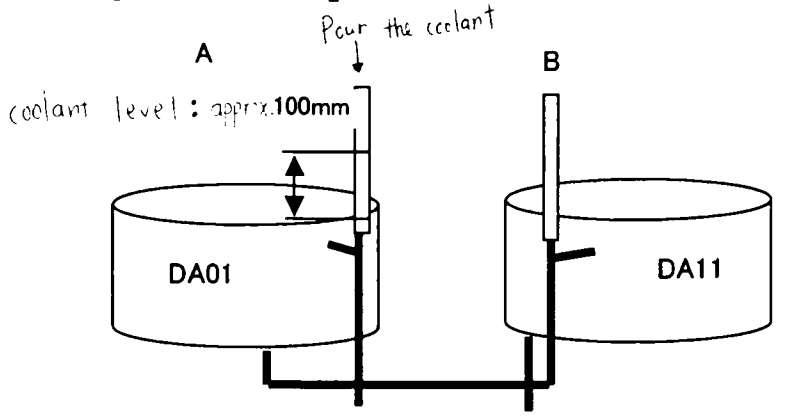
9) Fit the Lifelon tubes (12×18, length appox. 300 mm) to each of the inlets of the coolant, where circles indicate in the figure.
* One of the Lifelon tubes can be used with a cock (MD2316).
If using a tube with the cock, fit it to the inlet of the DA11.





inlets of the coolant

10) Pour the coolant into the tubing.
   ① Pour the coolant into the tubing through the tube "A" until the level of the coolant is approx. 100 mm above the top of the DA01. The tube "B" is opened.
   ② Rub the tube "A".
   ③ Repeat ① and ② until the level of the coolant becomes stable.
   ④ Make sure that the level of the coolant is stable, then shut both of the tube "A" and the tube "B". To shut the tubes, fold over and bind each of them with a SKB. (If the tube "B" has a cock, turn the cock to shut the tube.)
   ⑤ Disconnect the connector of the coolant circulating pump (No.181), that is in the left part of the analyzer.
   ⑥ Turn on the AU640.
   ⑦ Connect the connector (No.181).
   Operate the coolant circulating pump for approx. 5 minutes.
   ⑧ Stop the operation of the pump.
   Cut the SKB's on both of the tube "A" and the "B" to open them.
   (If the tube "B" has a cock, turn the cock to open the tube.)
   Leave the tubing until the coolant becomes stable.
   ⑨ Shut the tube "B" with the fingers or by turning the cock.
   Pour the coolant into the tubing through the tube "A".
   ⑩ Repeat ⑦-⑨ until the level of the coolant becomes stable.
   ⑪ Open the tube "A" and the "B". Remove excess coolant from the tubing.
   * Mishima uses Terumo syringe to suck excess coolant.
11) Remove the tube "A" and the tube "B" from each of the inlets of the coolant. Cover all surfaces of the plugs (MD7293) with seal tape, and fit them to each of the inlets.
12) Cover each of the inlets with heat insulator, and wind vinyl tape around them. Make sure to cover the metal part and the tubing completely.
13) Attach the fan assy. to the analyzer.



* The tube "A" is shut with a SKB only during the operation of the pump.
* If the tube "B" is without the cock, you will use several SKB's to repeat the shutting and the opening of the tube "B".

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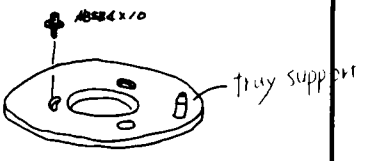
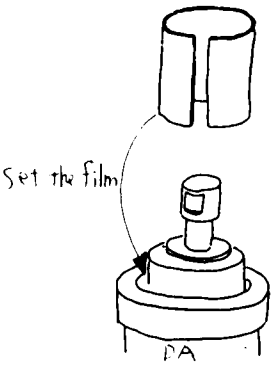
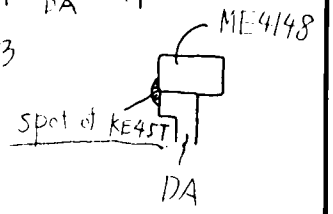
Adjusting the DA unit.

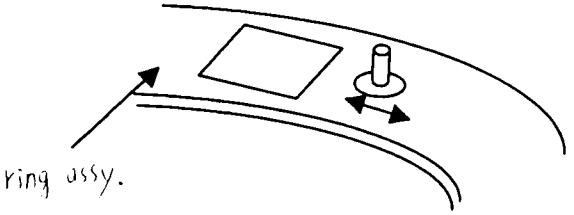
1) Start up the instrument.
2) Adjust the stopping position of the DA unit.
   ① Remove the DA lid, then set the magnet (DY2013), as a dummy, on the magnet of the DA unit.
   ② Align the DA unit with the position of the R probe. (See the service manual.)
   ③ Remove the tray support.
   ④ Stick the packing (ME4148):
   Set the positioning film (JC16-M520-AA01-ME4148) round the shaft to stick the ME4148 in the right position. Stick the ME4148 on the DA unit. Remove the JC16-M520-AA01-ME4148 from the shaft. Apply six evenly spaced silicone spots (KE45T) round the side of the ME4148 and the DA unit.
   ⑤ Align the tray support with the DA unit, then fix the tray support to the DA unit. (See the service manual.)
   ⑥ Stick the seals (ME8463) on the screw holes.
   ⑦ Check the dead volume of the bottle. (See the service manual.)

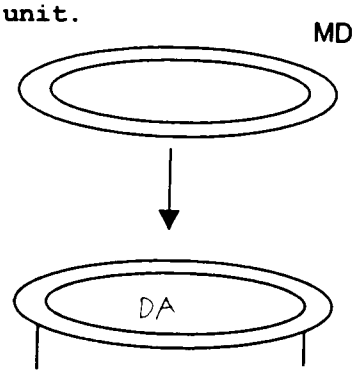




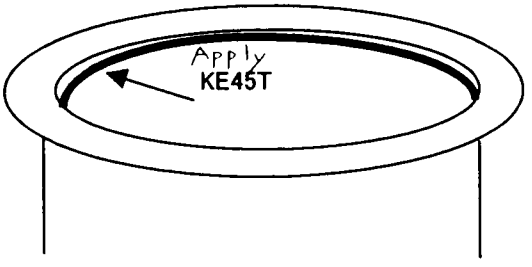


3) Adjust the DA cover.
   ① Remove the magnet as a dummy (DY2013), and set the DA lid on the DA unit.
   ② Adjust the positioning pin of the DA and adjust the gray PVC ring assy. so that the R probe enters into the mouth of the bottle through the square hole.
   ③ Stick the heat insulator (MD7552) on the DA unit.





   ④ Apply the silicone KE45T on the slight clearance in between the DA container and the gray PVC ring.



4) Adjust the barcode reader and the bottle presence sensor.
   ① Adjust the position of the barcode reader. (See the service manual.)
   ② Adjust the bottle presence sensor. (See the service manual.)
5) Replace the left panel, the cover F and the covers around the DA01 and the DA11.

Work load: 4 H

ENGINEERING CHANGE NOTICE (☒English / ☒Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No.:	REV.	PAGE
AU640	Preventive action for rust on the bearing of the DA11	☒ DCN ☐ TCN	521-107	A	01/06

DATE :	ISSUED BY :		
Mar. 12, 2001	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO.,LTD.	APP.	Tadashi Basso
		APP.	A. Toyama
		CHK.	S. Yoshimura
		DSGN.	Y. Hachizuki

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE EC No.:	DOCUMENT TO BE REFERRED :
☐ ALL ☐ PART OF "SHIPPED" ☒ FROM NEXT SHIPMENT (# produced from Mar. 2001)	☒ PERMANENT ☐ TEMPORARY UP TO ☐ SPECIAL	RISK ANALYSIS (☒Yes ☐No)	CLAIM CARD TO BE REFERRED :

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB		UP	DW	NO
M521-ANL11	MU5442	C8	C9	M521-DA11	MU5461	MU6425	04C	05D		NEW					
M521-ANL21	MU5443	C8	C9	514 PM assy.	MU4979	MU4979	A	A	--	--	--	--		○	

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US :USABLE RP :REPAIR AB :ABANDON

1.Reasons of change
2.Contents of change
3.List of articles for modification
4.List of jigs, tools, inspection apparatus for modification
5.Modification method & work load
6.List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐Yes ☒No)

If Yes, provide explanation:

PROCEDURAL AND OPERATIONAL CHANGES (Any procedural or operational changes? ☐Yes ☒No)

If Yes, provide description:

LABELING CHANGES (Any changes to Service or Technical documentation? ☒Yes ☐No)

If Yes, provide information:

Service manual will be revised in the next version (within 6 months)

*To : Technical Service Department(OT) Please fill in this space.

EC NO.	PAGE
521-107	02/06

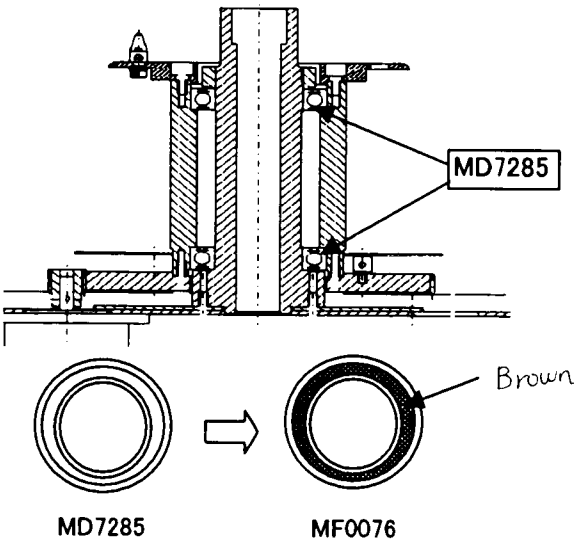
1.Reasons of change

The bearings in the DA unit failed to rotate properly on an AU600, that are being used for more than 2 years. The bearings had rust, and this caused its malfunction. It has been decided to take a preventive action for rust to the AU640 and to the AU400.

2.Contents of change

Replacement of the bearing (MD7285)→(MF0076)
The MD7285 has steel on its both sides.
The new bearing (MF0076) has rubber on its both sides.

Replacement of the drive motor (MU2912)→(MU4979)
The drive motor (MU2912) is replaced with the MU4979, that has been used for the AU400. This is because the sliding resistance will increase with the new bearings.



3.List of articles for modification

MU6425 M521-DA11

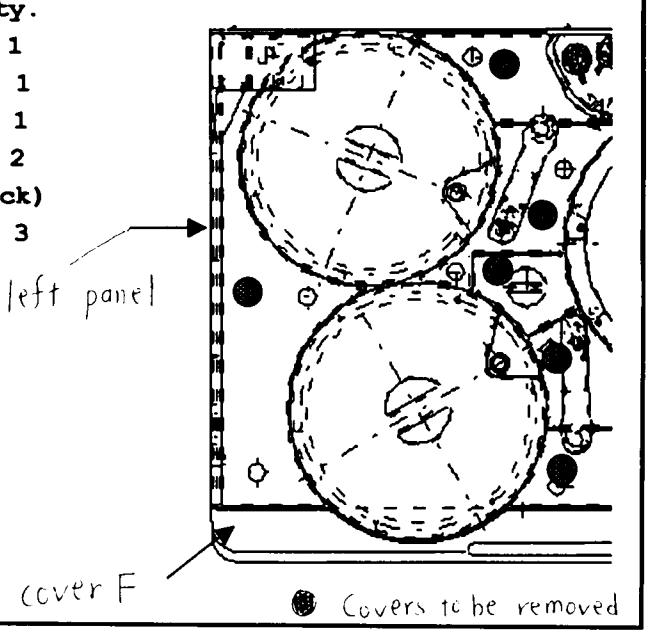
4.List of jigs,tools,inspection apparatus for modification

	qty.
Positioning film (JC16-M520-AA01-ME4148)	1
Square container for catching the coolant	1
Magnet (DY2013)	1
Lifelon tube 12×18×300	2
(One of the tubes can be used with MD2316 cock)	
Lifelon tube 12×18×arbitrary length	3
Seal tape, Vinyl tape, KE45T,	
Syringe for sucking coolant	

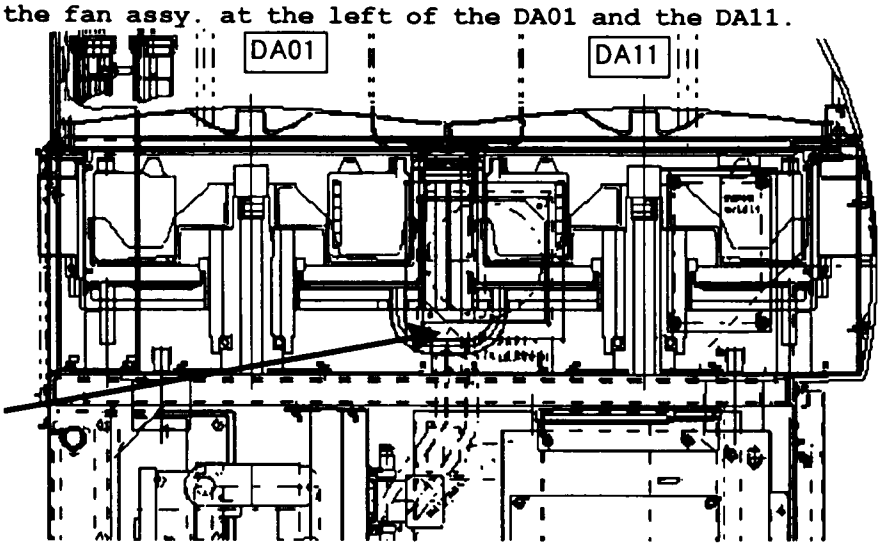
5.Modification method & Work load

Procedure for replacing the DA unit

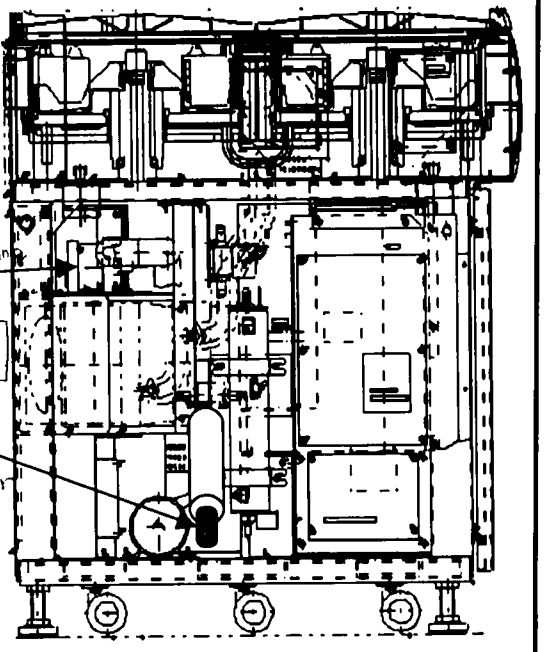
1) Turn off the AU640.
2) Remove the left panel, the cover F and the covers around the DA01 and the DA11.



3) Remove the fan assy. at the left of the DA01 and the DA11.



4) Release the coolant from the DA coolant tubing.
The DA01 and the DA11 each has the inlet of the coolant.
Remove the plugs (MD7293) from both of the inlets of the coolant.
Put a square container under the outlet of the coolant, that is in the lower left part of the analyzer.
Remove the PVC stopper from the outlet of the coolant to release the coolant.
Make sure to fit the PVC stopper to the outlet of the coolant after the coolant is removed.



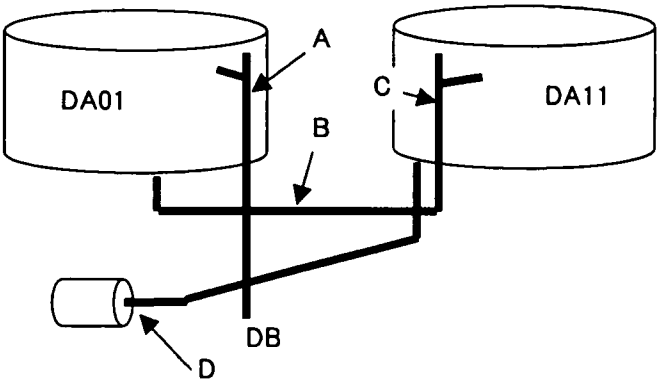
5) Disconnect the DA coolant tubing at the joints.
The tubing has joints at the places where the arrows "A", "B", "C" and "D" indicate in the figure below.
Remove the heat insulator round each of the joints, then disconnect the joints from each other.

When replacing the DA01, disconnect the joints "A", "B".

When replacing the DA11, disconnect the joints "C", "D".

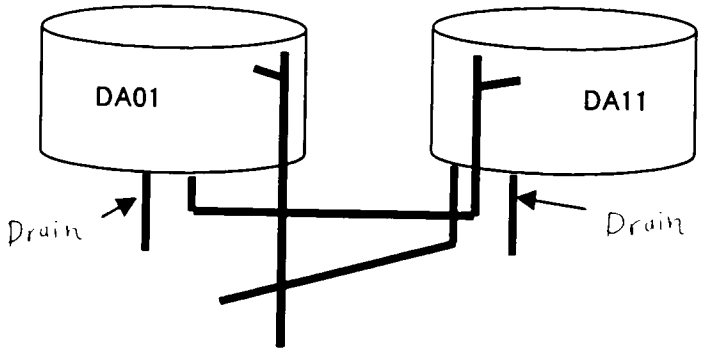
For A, C : Block the edges of the tubing, that is attached to the unit.

For B, D : Block both of the edges.



Block the disconnected places of the DA coolant tubing with Lifelon tubes (12×18× arbitrary length) : fold over one end of the Lifelon tube and bind it with a SKB, then fit the other end of the tube onto the disconnected places as indicated above.
This is to prevent the remaining of the coolant from spilling into the analyzer when removing the DA01 or DA11 from the analyzer.

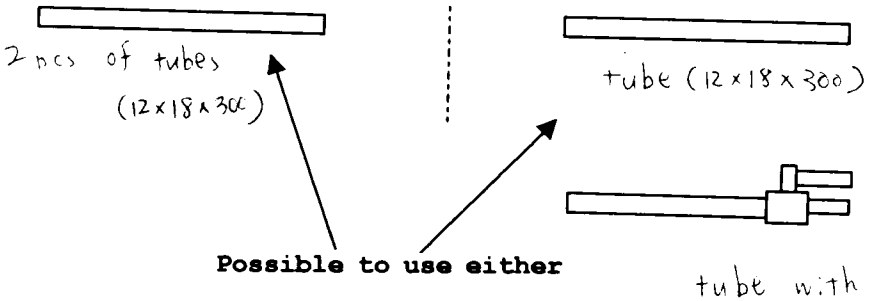
6) Disconnect the drain tubing at the joint appox. 5 cm under the bottom of the DA unit.



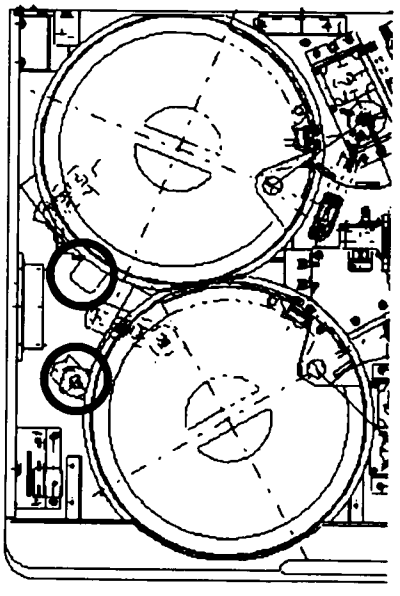
7) Disconnect the wiring of the DA unit.
Unscrew the fixing screws, then remove the DA unit from the analyzer.

8) Mount the new DA unit on the analyzer and tighten the fixing screws.
* Connect the wiring, and connect the drain tubing to the new DA unit by reversing the removal procedure. (step 6,7).
* Join the disconnected places of the DA coolant tubing, then cover each of the joints with the removed heat insulators and vinyl tape.
If the tubing or its metal is left uncovered, condensation will occur and drops may fall in the analyzer.

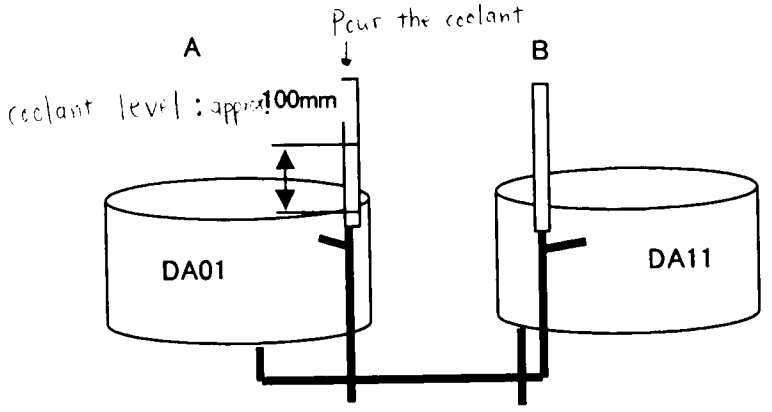
9) Fit the Lifelon tubes (12×18, length appox. 300 mm) to each of the inlets of the coolant, where circles indicate in the figure.
* One of the Lifelon tubes can be used with a cock (MD2316).
If using a tube with the cock, fit it to the inlet of the DA11.



inlets of the coolant



10) Pour the coolant into the tubing.
   ① Pour the coolant into the tubing through the tube "A" until the level of the coolant is approx. 100 mm above the top of the DA01. The tube "B" is opened.
   ② Rub the tube "A".
   ③ Repeat ① and ② until the level of the coolant becomes stable.
   ④ Make sure that the level of the coolant is stable, then shut both of the tube "A" and the tube "B". To shut the tubes, fold over and bind each of them with a SKB. (If the tube "B" has a cock, turn the cock to shut the tube.)
   ⑤ Disconnect the connector of the coolant circulating pump (No.181), that is in the left part of the analyzer.
   ⑥ Turn on the AU640.
   ⑦ Connect the connector (No.181).
   Operate the coolant circulating pump for approx. 5 minutes.
   ⑧ Stop the operation of the pump.
   Cut the SKB's on both of the tube "A" and the "B" to open them.
   (If the tube "B" has a cock, turn the cock to open the tube.)
   Leave the tubing until the coolant becomes stable.
   ⑨ Shut the tube "B" with the fingers or by turning the cock.
   Pour the coolant into the tubing through the tube "A".
   ⑩ Repeat ⑦-⑨ until the level of the coolant becomes stable.
   ⑪ Open the tube "A" and the "B". Remove excess coolant from the tubing.
   * Mishima uses Terumo syringe to suck excess coolant.
11) Remove the tube "A" and the tube "B" from each of the inlets of the coolant. Cover all surfaces of the plugs (MD7293) with seal tape, and fit them to each of the inlets.
12) Cover each of the inlets with heat insulator, and wind vinyl tape around them. Make sure to cover the metal part and the tubing completely.
13) Attach the fan assy. to the analyzer.



* The tube "A" is shut with a SKB only during the operation of the pump.
* If the tube "B" is without the cock, you will use several SKB's to repeat the shutting and the opening of the tube "B".

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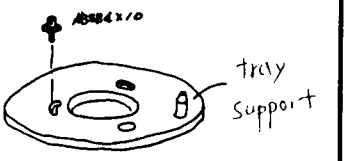
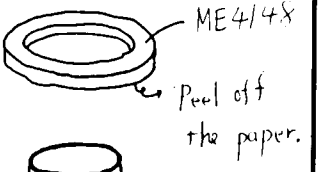
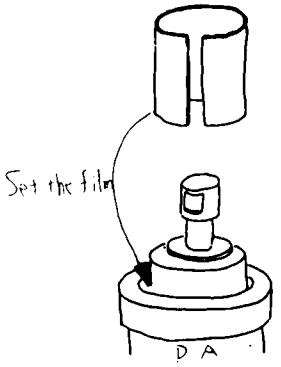
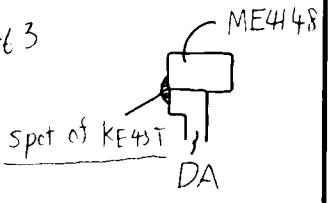
Adjusting the DA unit.

1) Start up the instrument.
2) Adjust the stopping position of the DA unit.
   ① Remove the DA lid, then set the magnet (DY2013), as a dummy, on the magnet of the DA unit.
   ② Align the DA unit with the position of the R probe. (See the service manual.)
   ③ Remove the tray support.
   ④ Stick the packing (ME4148):
   Set the positioning film (JC16-M520-AA01-ME4148) round the shaft to stick the ME4148 in the right position. Stick the ME4148 on the DA unit. Remove the JC16-M520-AA01-ME4148 from the shaft. Apply six evenly spaced silicone spots (KE45T) round the side of the ME4148 and the DA unit.
   ⑤ Align the tray support with the DA unit, then fix the tray support to the DA unit. (See the service manual.)
   ⑥ Stick the seals (ME8463) on the screw holes.
   ⑦ Check the dead volume of the bottle. (See the service manual.)

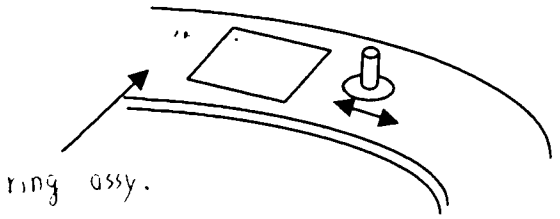


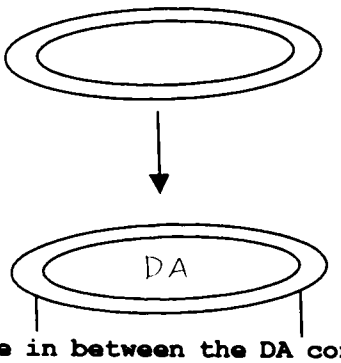




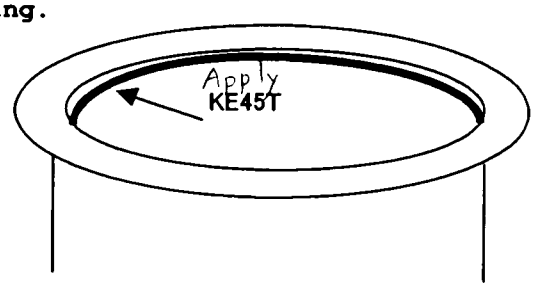


3) Adjust the DA cover.
   ① Remove the magnet as a dummy (DY2013), and set the DA lid on the DA unit.
   ② Adjust the positioning pin of the DA and adjust the gray PVC ring assy. so that the R probe enters into the mouth of the bottle through the square hole.
   ③ Stick the heat insulator (MD7552) on the DA unit.





   ④ Apply the silicone KE45T on the slight clearance in between the DA container and the gray PVC ring.



4) Adjust the barcode reader and the bottle presence sensor.
   ① Adjust the position of the barcode reader. (See the service manual.)
   ② Adjust the bottle presence sensor. (See the service manual.)
5) Replace the left panel, the cover F and the covers around the DA01 and the DA11.

Work load: 4 H

Message of the optical com errors are not always indicating defective PCB.
This information is just case study when 24V power is failed for one PCB.
This results is showing that ERR LED on the next PCB from defective PCB is ON.

Error 3106 (88h,08h,xx) Failure		Normal	0Ah PS4off	01h MV1019 OUT32x	02h MV1013 24V x	03h MV2329 24V x	04h MV1014 24V x	05h MV2347 24V x	06h MV2344 24V x	07h MV2345 24V x	08h MV2346 24V x	09h MV1014 24V x	0Ah MV1019 IN25 x
MV1013	DA/FB	oox+o	xxxxx	oxoxx	xxxxx	oooxx	oooxx	oooxx	oooxx	oooxx	oooxx	oooxx	oooxx
MV2329	R1	oox+o	xxxxx	oxoxx	oxoxx	xxxxx	oooxx	oooxx	oooxx	oooxx	oooxx	oooxx	oooxx
MV1014	M2	oox+o	xxxxx	oxoxx	oxxoo	oxoxx	xxxxx	oooxx	oooxx	oooxx	oooxx	oooxx	oooxx
MV2347	S	oox+o	xxxxx	oxxoo	oxxoo	oxoxx	oxoxx	xxxxx	oooxx	oooxx	oooxx	oooxx	oooxx
MV2344	C	oox+o	xxxxx	oxxoo	oxxoo	oxoxx	oxoxx	oxoxx	xxxxx	oooxx	oooxx	oooxx	oooxx
MV2345	Repeat	oox+o	xxxxx	oxxoo	oxxoo	oxoxx	oxoxx	oxoxx	oxoxx	xxxxx	oooxx	oooxx	oooxx
MV2346	SA	oox+o	xxxxx	oxxoo	oxxoo	oxoxx	oxoxx	oxxoo	oxoxx	oxoxx	xxxxx	oooxx	oooxx
MV1014	M1	oox+o	xxxxx	oxxoo	oxxoo	oxoxx	oxxoo	oxxoo	oxxoo	oxoxx	oxoxx	xxxxx	oooxx
MV2329	R2	oox+o	xxxxx	oxxoo	oxxoo	oxxoo	oxxoo	oxxoo	oxxoo	oxxoo	oxoxx	oxoxx	xxxxx
MV1019	Master	oox+o	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx	oxoxx

LED Status (MV1019. DS6,7,8,9,10
(Others) DS1,2,3,4,5 Run,Com,Err,ST0,ST1
o: LED ON
x: LED OFF
+: LED Dark ON
xxxxx: LED all OFF because 24V connector is disconnected.
oxoxx Condition of the next PCB from the failre PCB.

(How to observe LED.

MV1013	DA/FB	Remove Left cover.
MV2329	R1	Remove Upper cover.
MV1014	M2	Remove Rear cover and use mirror.
MV2347	S	Remove Upper cover.
MV2344	C	Remove Right inside cover.
MV2345	Repeat	Remove Right lower door.
MV2346	SA	Remove Center inside cover.
MV1014	M1	Remove Upper cover and use mirror.
MV2329	R2	Remove Upper cover.

MV1019 Master

AU600/AU640 Components for Temperature Control

1. GA (Incubation Bath) Temp. and Cooling FAN

Controller	Target	Thermistor	Heater
MU4731 (MV1986)	Incubation Temp.	MU1711 (DT037100)	MU2967 (250W)
	Instrument Internal Temp.	MU1693 (DT020400)	(FAN)

2. R2 and D.I.Water Temp.

Controller	Target	Thermistor	Heater
MU4659 (MV1950)	R2 Temp.	DT035600	MU3537 (EF)
	D.I.Water Temp.	MU3254 (DT060900)	MU3532 (500W)

3. Wash water Temp.

Controller	Target	Thermistor	Heater
MU4660 (MV1951)	Wash water	MU3255 (DT060800)	MU2961 (DT060400) (350W)
		MU3539 (DT063900)	

4. DA Refrigerator Temp.

Controller	Target	Thermistor	Peltier
MU4732 (MV1985)	Peltier cooling unit (R. compartment)	MU3255 (DT060800)	MU3629B

5. DC Refrigerator Temp.(AU640 only)

Controller	Target	Thermistor	Peltier
MU5530 (MV2355)	Peltier cooling unit (STAT)	MU3255 (DT060800)	MU5536

6. ISE Temp.

Controller	Target	Thermistor	Heater
MU3583 (MV1041)	Just for monitor	MU1425 (EMU11-500)	none

7. PCB oriented table

PCB (AU600 old)	J No.	Thermister	Usage	Remarks
MV1986 (MV1949,MV1022)	J1	DT037100	GA Temp.	ITP010-07
	J3	DT020400	FAN control	PBL-41E09
MV1950 (MV1023)	J1	DT060900	D.I.Water	ITP0100-20
	J3	DT035600	R2 EF	YSI44037S
MV1951 (MV1027)	J1	DT063900	Wash water	MT-2A
	J3	DT060800	Detergent A	ITP0100-19
MV1985 (MV1010)	J5	DT060800	DA refrigerator	ITP0100-19
MV2355 (none)	J1	DT060800	DC refrigerator	ITP0100-19
MV1041 (ISE)	J12	EMU11-500	ISE Temp.	from A & T

DT020400 (PBL-41E09)
3687 ohm=35° C
DT060800 (ITP0100-19)
3109 ohm =about 18° C, 1656 ohm = about 32° C(MV1951)
4937 ohm =8° C, 3081 ohm =18° C(MV1985)
4520 ohm =10° C, 2818 ohm =20° C(MV2355)
DT060900 (ITP0100-20)
1977 ohm =28° C
DT035600 (YSI44037S)
2059 ohm =52°C
DT037100 (ITP010-07)
1328 ohm =37.5° C, 1633 ohm =32.5° C
DT063900 (MT-2A)
1648 ohm =62° C, 2223 ohm =44° C
See table1,2, and 3 for detail

(Table1) Specification of DT063900(MT-2A) (From 30 to 70 by 1 step)

Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm
30.0	2819	40.0	2381	50.0	2007	60.0	1701	70.0	1459
31.0	2773	41.0	2340	51.0	1973	61.0	1674		
32.0	2727	42.0	2300	52.0	1940	62.0	1648		
33.0	2682	43.0	2261	53.0	1908	63.0	1622		
34.0	2637	44.0	2223	54.0	1877	64.0	1597		
35.0	2593	45.0	2185	55.0	1846	65.0	1573		
36.0	2549	46.0	2148	56.0	1816	66.0	1549		
37.0	2506	47.0	2112	57.0	1786	67.0	1526		
38.0	2464	48.0	2076	58.0	1757	68.0	1503		
39.0	2422	49.0	2041	59.0	1729	69.0	1481		

(Table2) Specification of DT063900(MT-2A) (From 36.0 to 47.9 by 0.1 step)

Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm
36.0	2549	38.0	2464	40.0	2381	42.0	2300	44.0	2223	46.0	2148
36.1	2545	38.1	2460	40.1	2377	42.1	2296	44.1	2219	46.1	2144
36.2	2540	38.2	2456	40.2	2373	42.2	2292	44.2	2215	46.2	2141
36.3	2536	38.3	2451	40.3	2369	42.3	2288	44.3	2212	46.3	2137
36.4	2532	38.4	2447	40.4	2365	42.4	2284	44.4	2208	46.4	2134
36.5	2528	38.5	2443	40.5	2361	42.5	2281	44.5	2204	46.5	2130
36.6	2523	38.6	2439	40.6	2356	42.6	2277	44.6	2200	46.6	2126
36.7	2519	38.7	2435	40.7	2352	42.7	2273	44.7	2196	46.7	2123
36.8	2515	38.8	2430	40.8	2348	42.8	2269	44.8	2193	46.8	2119
36.9	2510	38.9	2426	40.9	2344	42.9	2265	44.9	2189	46.9	2116
37.0	2506	39.0	2422	41.0	2340	43.0	2261	45.0	2185	47.0	2112
37.1	2502	39.1	2418	41.1	2336	43.1	2257	45.1	2181	47.1	2108
37.2	2497	39.2	2414	41.2	2332	43.2	2253	45.2	2177	47.2	2105
37.3	2493	39.3	2409	41.3	2328	43.3	2249	45.3	2174	47.3	2101
37.4	2489	39.4	2405	41.4	2324	43.4	2245	45.4	2170	47.4	2098
37.5	2485	39.5	2401	41.5	2320	43.5	2242	45.5	2166	47.5	2094
37.6	2480	39.6	2397	41.6	2315	43.6	2238	45.6	2162	47.6	2090
37.7	2476	39.7	2393	41.7	2311	43.7	2234	45.7	2158	47.7	2087
37.8	2472	39.8	2388	41.8	2307	43.8	2230	45.8	2155	47.8	2083
37.9	2467	39.9	2384	41.9	2303	43.9	2226	45.9	2151	47.9	2080

(Table3) Specification of DT063900(MT-2A) (From 56.0 to 67.9 by 0.1 step)

Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm	Temp	Ohm
56.0	1816	58.0	1757	60.0	1701	62.0	1648	64.0	1597	66.0	1549
56.1	1813	58.1	1754	60.1	1698	62.1	1645	64.1	1595	66.1	1547
56.2	1810	58.2	1751	60.2	1696	62.2	1643	64.2	1592	66.2	1544
56.3	1807	58.3	1749	60.3	1693	62.3	1640	64.3	1590	66.3	1542
56.4	1804	58.4	1746	60.4	1690	62.4	1638	64.4	1587	66.4	1540
56.5	1801	58.5	1743	60.5	1688	62.5	1635	64.5	1585	66.5	1538
56.6	1798	58.6	1740	60.6	1685	62.6	1632	64.6	1583	66.6	1535
56.7	1795	58.7	1737	60.7	1682	62.7	1630	64.7	1580	66.7	1533
56.8	1792	58.8	1735	60.8	1679	62.8	1627	64.8	1578	66.8	1531
56.9	1789	58.9	1732	60.9	1677	62.9	1625	64.9	1575	66.9	1528
57.0	1786	59.0	1729	61.0	1674	63.0	1622	65.0	1573	67.0	1526
57.1	1783	59.1	1726	61.1	1671	63.1	1620	65.1	1571	67.1	1524
57.2	1780	59.2	1723	61.2	1669	63.2	1617	65.2	1568	67.2	1521
57.3	1777	59.3	1721	61.3	1666	63.3	1615	65.3	1566	67.3	1519
57.4	1774	59.4	1718	61.4	1664	63.4	1612	65.4	1563	67.4	1517
57.5	1772	59.5	1715	61.5	1661	63.5	1610	65.5	1561	67.5	1515
57.6	1769	59.6	1712	61.6	1658	63.6	1607	65.6	1559	67.6	1512
57.7	1766	59.7	1709	61.7	1656	63.7	1605	65.7	1556	67.7	1510
57.8	1763	59.8	1707	61.8	1653	63.8	1602	65.8	1554	67.8	1508
57.9	1760	59.9	1704	61.9	1651	63.9	1600	65.9	1551	67.9	1505

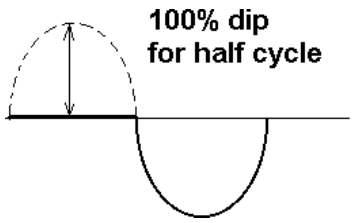
■ Power failure

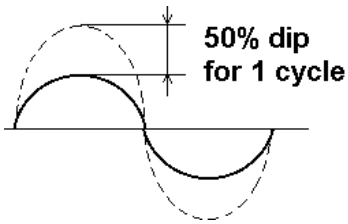
This information is showing about acceptance of the power failure.
Instruments are checked under the following power conditions.

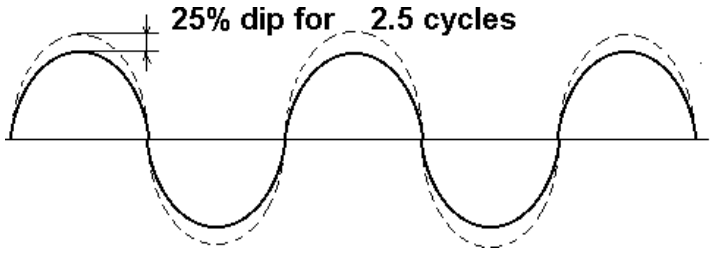
- **Vary of voltage**
  Fluctuation allowance +/- 10 %

- **Spike noise**
  Voltage level 600V
  Pulse width 800nsec
  Rising 1nsec

- **Power interruption**
  100% dip 10msec (0.5 Cycle)
  50% dip 20msec (1 Cycle)
  25% dip 50msec (2.5 Cycles)







- **Vary of frequecy**
  50Hz +/- 1Hz
  60Hz +/- 1Hz

ENGINEERING CHANGE NOTICE (☒English / ☒Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No.: 521-132	REV.	PAGE
AU640	Preventive action for the wrong reagent empty alarms	☒DCN ☐ TCN	ECR No.: CMN No.:AU640-027	A	1/4

DATE :	ISSUED BY :	APP.	
May/13/2002	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO.,LTD.	APP.	
		CHK.	
		DSGN.	

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE	DOCUMENT TO BE
☐ ALL ☒ PART OF "SHIPPED"	☒PERMANENT	EC No.:None	REFERRED : None
☒ FROM NEXT SHIPMENT (#888-)	☐ TEMPORARY UP TO ☐ SPECIAL	RISK ANALYSIS (☐Yes ☒No)	CLAIM CARD TO BE REFERRED :134-116

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB		UP	DW	NO
M521-ANL11	MU5442	D6	D7	M521-FA01	MU5455	MU5501	03B	04C		X					X
M521-ANL21	MU5443	D6	D7	M521-FD01	MU5456	MU5502	04C	05D		X					X
				M521-FD11	MU5457	MU5503	04C	05D		X					X

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US :USABLE AB :ABANDON
RP :REPAIR

1.Reasons of change
2.Contents of change
3.List of articles for modification
4.List of jigs, tools, inspection apparatus for modification
5.Modification method & work load
6.List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐Yes ☒No)

If Yes, provide explanation:

PROCEDURAL AND OPERATIONAL CHANGES(Any procedural or operational changes? ☐Yes ☒No)

If Yes, provide description:

LABELING CHANGES (Any changes to Service or Technical documentation? ☐Yes ☒No)

If Yes, provide information:

*To : Technical Service Department(OT) Please fill in this space.

1.Reasons of change

The wrong surface detection and the wrong crash prevension have occurred by damage on the wire of a probe unit. The cause which the wire is damaged is that stress concentrated on one point of the wire. In order to prevent such damage, wiring is changed as follows.

2.Contents of change

Replacement of the wire.

	FA		FD	
	before	after	before	after
①Suface detection	MV2573	MV3272	MV2092	MV3271
②FG	MV2128	MV3278	MV2128	MV3276
③Collision detection	MV2572	MV3279	MV2089	MV3277

④The plate(MF0031) is attached at the side of the motor drive board so that the wires do not touch the board.

⑤ The plate(MD7306) holding the motor drive board is replaced by another plate(MF0230). The wires, routing upward from the spline axis, are fixed on the new plate. This alteration is to reduce the bending of the wires.

⑥The plate(MD7788) holding a connector is replaced by another plate(MF0221). The additional ferrite core is fixed on the new plate.

Since MD7788 is attached in AA unit, it is hard to exchange MD7788 of the already shipped analyzer. Then, the parts(MF0339) which convert MD7788 into a thing equivalent to MF0221 were made.

	FA,FD	
	before	after
④Plate	—	MF0031
⑤Plate	MD7306	MF0230
⑥Plate	MD7788	MF0221 (≒MD7788+MF0339)

Replacement of the tube and sleeve.

	before	after
⑦tube,Sleeve	ME7272,ME7760	MF0033,MF0032

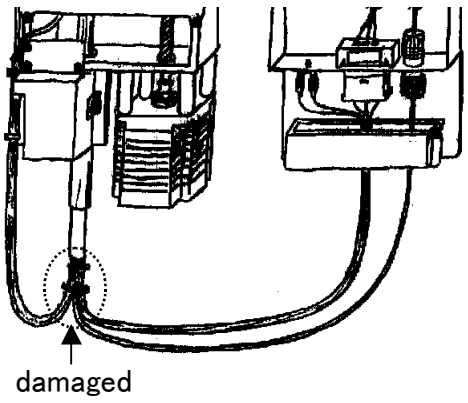


Fig1 before alteration

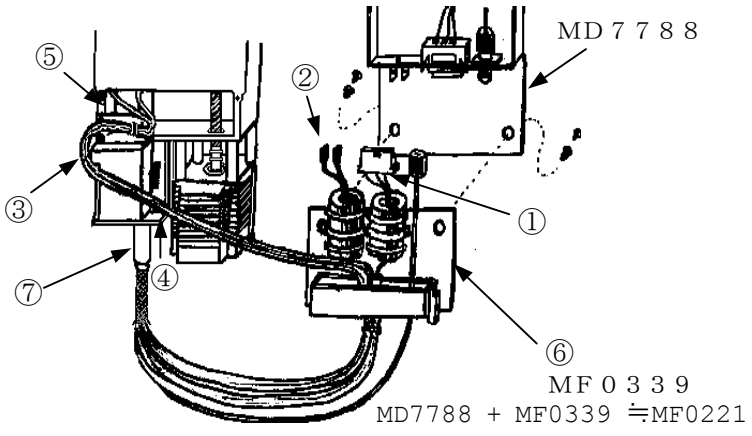


Fig2 after alteration

3.List of articles for modification

MU6830	(MF0339 plate for FA,FD)	x3	Part ⑥ is included.
MU6860	(A set of plates,tube,sleeve for FA,FD)	x3	Parts ④,⑤,⑦ are included.
MU6853	(A set of wires for FA)	x1	Parts ①,②,③ are included.
MU6854	(A set of wires for FD)	x2	Parts ①,②,③ are included.

Or (Case:replace a unit)

MU6830	(MF0339 plate for FA,FD)	x3
MU5501	(M521-FA01 Ver.04C)	x1
MU5502	(M521-FD01 Ver.05D)	x1
MU5503	(M521-FD11 Ver.05D)	x1

4.List of jigs, tools, inspection apparatus for modification

For arm adjustment.

Unit name	Jig No.	Note (Same as)	
M521-FA	**JC01-M521-FA01-MD7147**		
	JC10-M520-FA01-MD7414 (jig probe)	M521-FD	M253-FD
	JC03-M520-FA01-MD7118 (jig stand)	M521-FD	M253-FA
M521-FD	**JC09-M520-FA01-JC10**		M253-FD
	JC10-M520-FA01-MD7414 (jig probe)	M521-FA	M253-FD
	JC03-M520-FA01-MD7118 (jig stand)	M521-FA	M253-FA

For dead volume adjustment.

Unit name	Jig No.	Note (Same as)	
M521-FA	**JC04-M520-AA01-MD7147**		M253
	JC03-M520-AA01-MD7147 01 (jig probe)	M521-FD	
M521-FD	**JC03-M520-AA01-MD7147 Set**	include JC03-M520-AA01-MD7147 01	M253

Extraction tool.

06-1002-010 KYOCERA ELCO CORPORATION

5.Modification method & work load

1. Remove the FA, FD units, then replace to the countermeasured units. (refer to the service manual.)
2. Attach the MF0339 plate to the MD7788 bracket.
3. Fix the ferrite cores to the MF0339 plate.
4. Adjust dead volume(refer to the attached document) and the position of the rotation(refer to the service manual).
5. Check the unit revision.
   M521-ANL11 MU5442 D6 → D7
   M521-ANL21 MU5443 D6 → D7
   M521-AA01 MU5444 21S→ 22T
6. Check the apparatus runs normally at measure operation and there is no liquid leakage from the pipe connection parts.

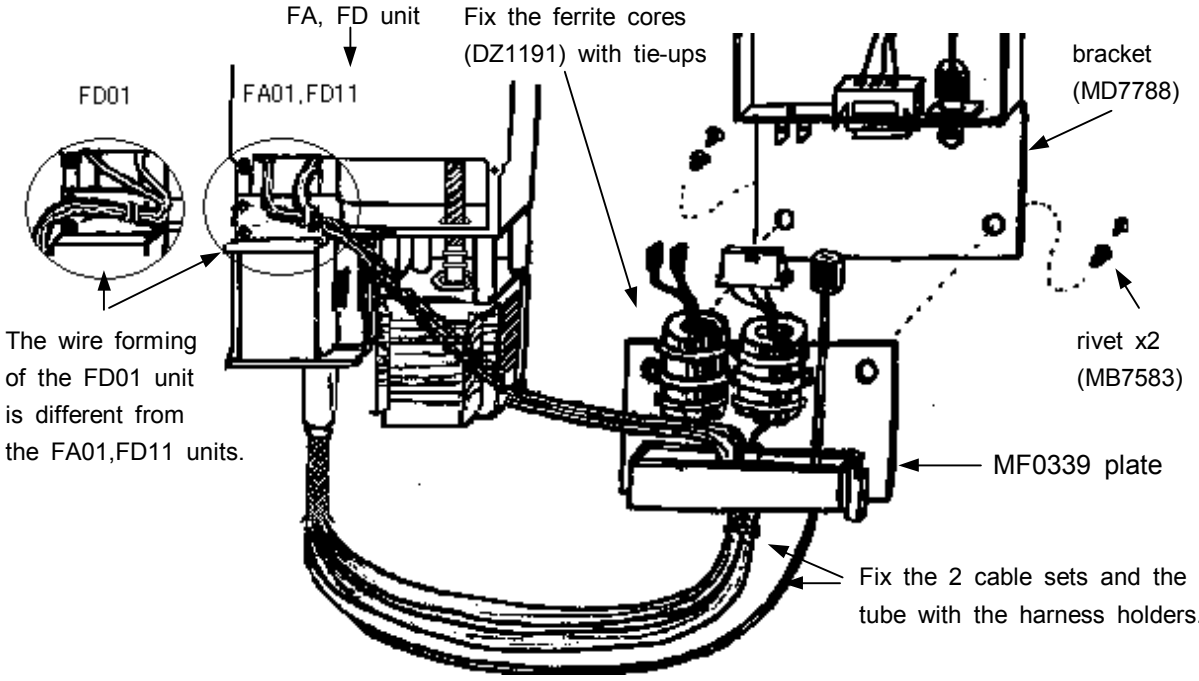


Fig 3 countermeasure of the FA01,FD01 and FD11 units

For the countermeasure operation procedure of the FA,FD units, refer to the attached document : Preventive action for the wrong reagent empty alarms ; M521-FA, FD countermeasure procedure.

6. Application to the shipped apparatus

The cable contains power supply, liquid detection signal, and crash prevension signal line. A different phenomenon described below happens with the part of the cable breaking or the happening timing or length.

- 'wrong liquid detection' .. misjudging that the probe touchs the liquid surface although there is no liquid or before the probe reachs the liquid surface.
- 'no liquid detection' .. the probe reached the liquid surface, but can't detect it. (The probe goes down to the lowest point.)
- 'continuous liquid detection' .. after liquid surface detection, the probe leaved from liquid but can't detect it.
- 'misjudging of the leaving from liquid' .. after liquid surface detection, misjudging that the probe doesn't touch liquid although the probe doesn't leave from liquid.
- 'wrong crash prevension' .. misjudging crash prevension although there is no crash of the probe.

exsamples of the error code: 3152 'no sample probe detergent', 3176 'sample probe up/down error'(15/16/19), 3179 'sample probe level detector error', 3220 'sample empty level detect', 3153/3154 'R1/R2 reagent probe detergent short', 3181/3188 'R1/R2 reagent probe up/down error'(12/13), 3185/3192 'R1/R2 reagent probe level detector error', 3216/3217 'R1/R2 reagent empty' , etc.

Apply this ECN to the shipped equipment in the case that there needs to apply. Example:

- above error regarding liquid surface detection or crash prevension happened.
- there are many samples to analyze.

M521-FA, FD countermeasure procedure

1. Table 1 is the list of all parts used in the countermeasure to the unit.

Repair Part		FA		FD		QTY	NOTE
		CODE #	NAME	CODE #	NAME		
FA cable set	(1)	MV3272	526C0001	MV3271	516C0001	1	liquid detect sensor cable
MU6853	(2)	MV3278	526C0002	MV3276	516C0002	1	FG cable
or	(3)	MV3279	526C0003	MV3277	516C0003	1	collision detect sensor cable
FD cable set	(4)	DK1178	harness connector	←		1	
MU6854	(5)	DK1500	harness connector	←		1	
	(6)	DK1213	harness connector	←		1	
	(7)	DO1101	tube	←		0.28m	
harness binder set	(8)	MF0339	harness plate	←		1	
MU6830	(9)	MA2386	harness binder	←		2	
	(10)	MB7583	rivet	←		2	
board supporter se	(11)	MF0230	board supporter	←		1	
MU6860	(12)	MF0031	L plate	←		1	
	(13)	MA2386	harness binder	←		1	
	(14)	ME0010	collar	←		2	
	(15)	MF0032	sleeve	←		1	
	(16)	MF0033	tube	←		1	
	(17)	DZ1191	other	←		2	ferrite core
	(18)		CUKSB 3x14	←		2	

Table 1. The list of all parts used in this countermeasure

2. Take off the connector pins from the cable connectors. You may cut off the wires except the 3 - 5pin of the 8pin connector to reuse. (reference to the figure 1.)

	FA01		FD01		FD11	
	Connector	cable	Connector	cable	Connector	cable
2P	604	MV2573	624	MV2092	644	MV2092
8P	605		625		645	
3P	613	MV2572	633	MV2089	653	MV2089

Table 2. The list of the parts number of the cables and connector numbers.

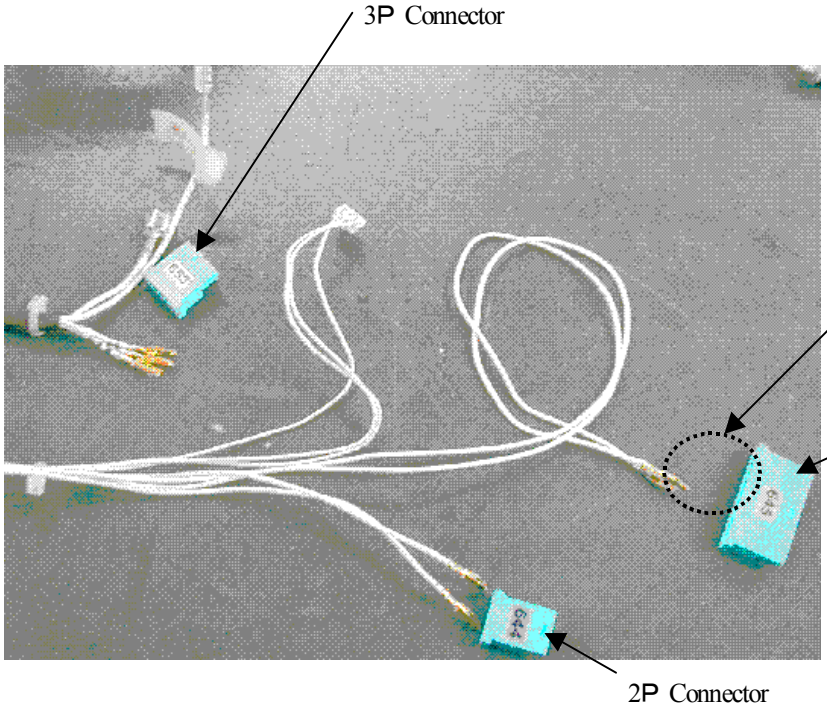

3P Connector
In the FA01 unit, the pins are inserted in the 3 - 5pin.
These pins are to reuse after this countermeasure.
8P Connector
2P Connector

Fig. 1. FD11 cables and connectors

2.
Disassemble the arm of the unit and pull out the tube downward from the axis.
Then, pull out the cables with the white tube upward.

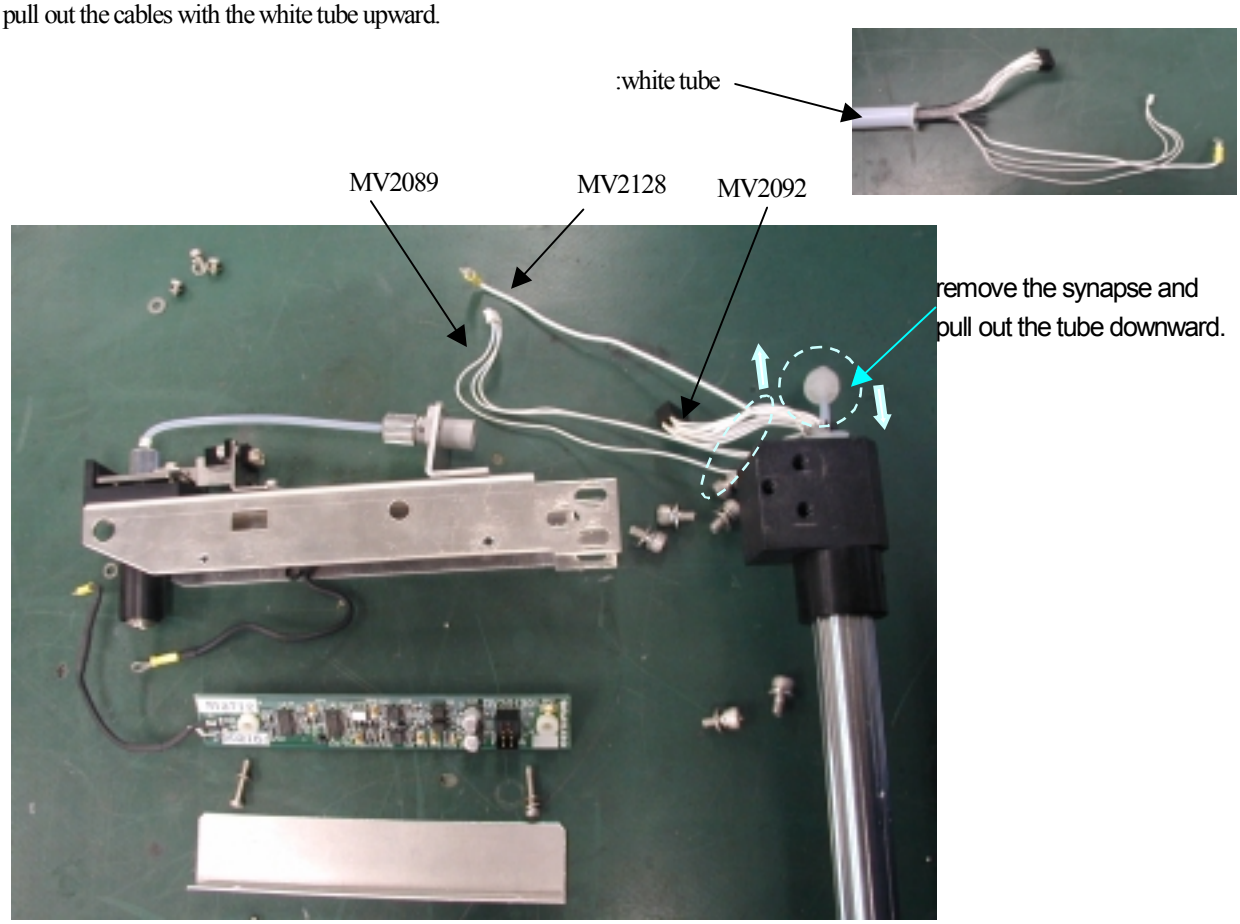


Fig. 2. FD11 arm

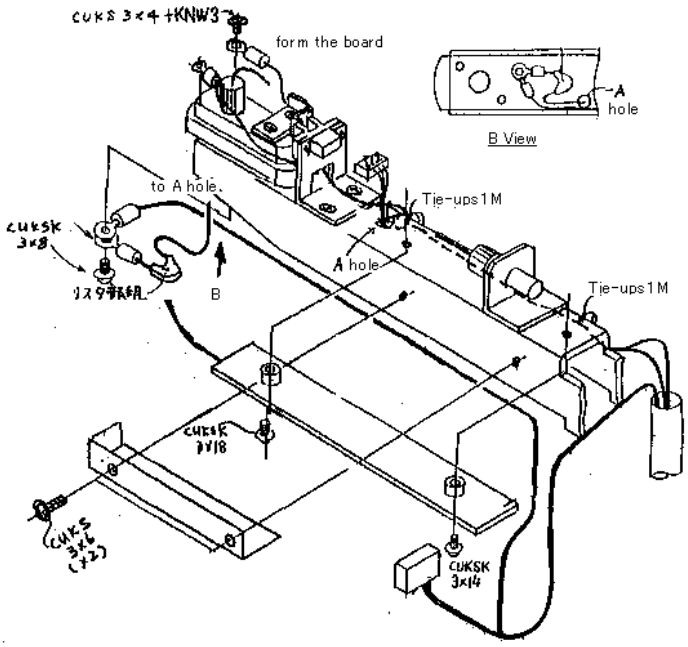
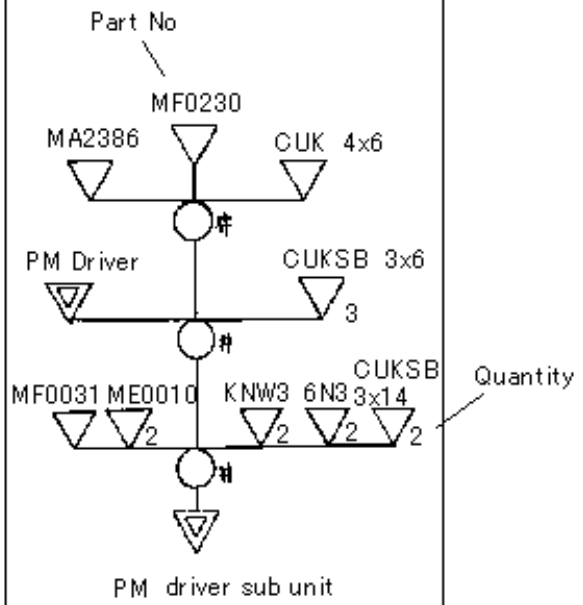


Fig. 3. Arm

3.
Equip with the countermeasure parts according to the Fig. 4 –10-.

▽ Parts ▼ Unit ▽ Tool ○ Process ◇ Inspection # Assemble # Disassemble + Adjustment

Tool	Steps		Fig



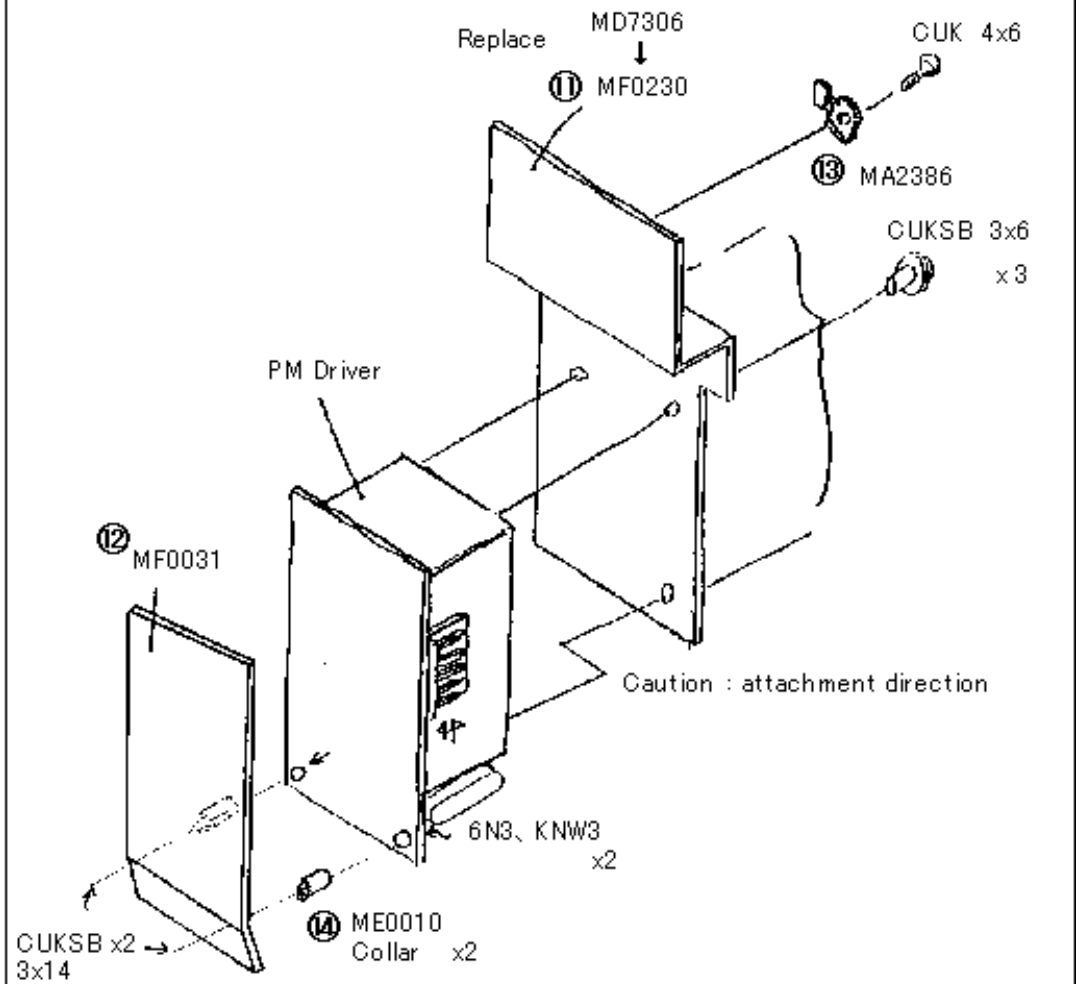


Fig4 Assembly procedure chart 1

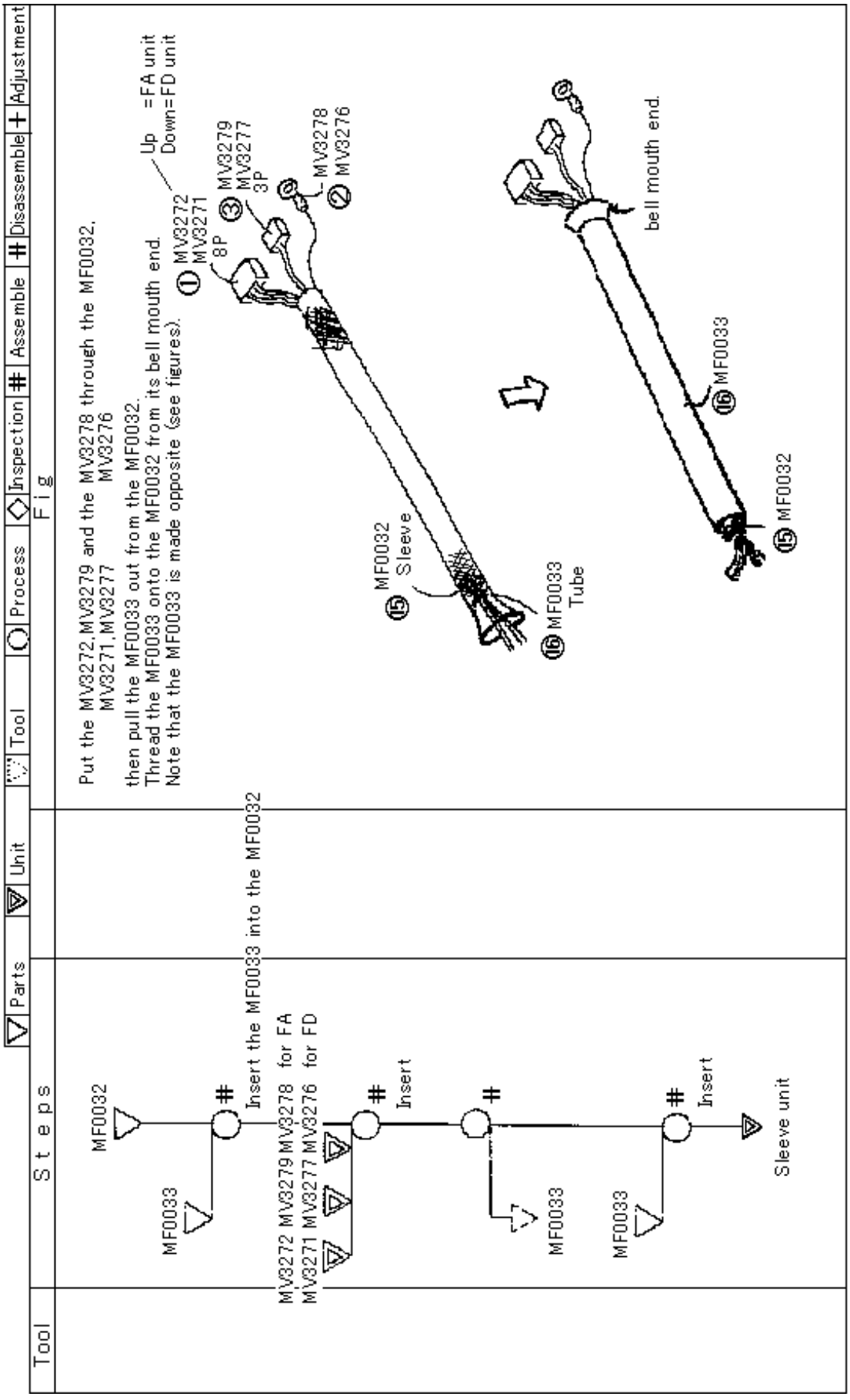


Fig5 Assembly procedure chart 2

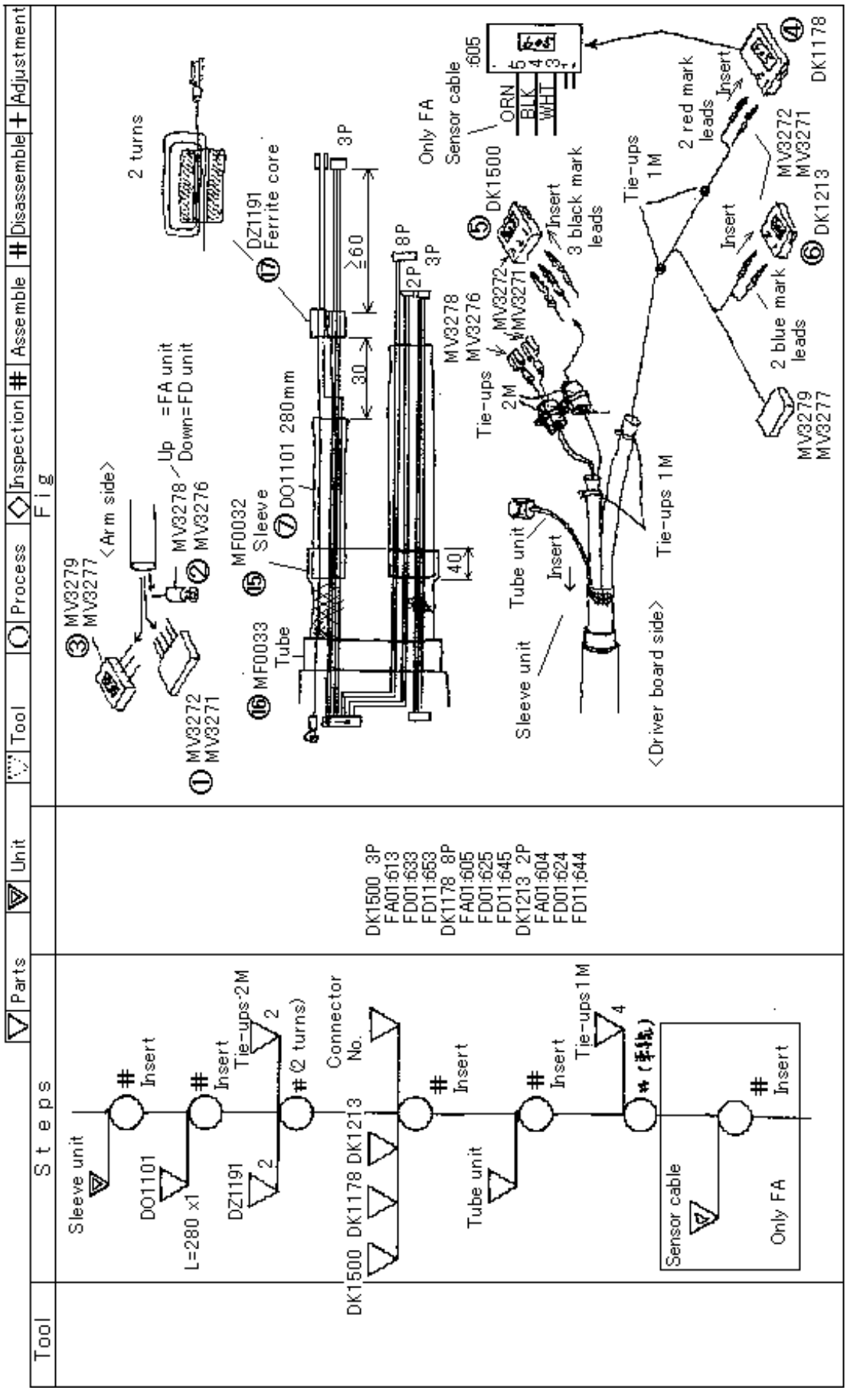


Fig6 Assembly procedure chart 3

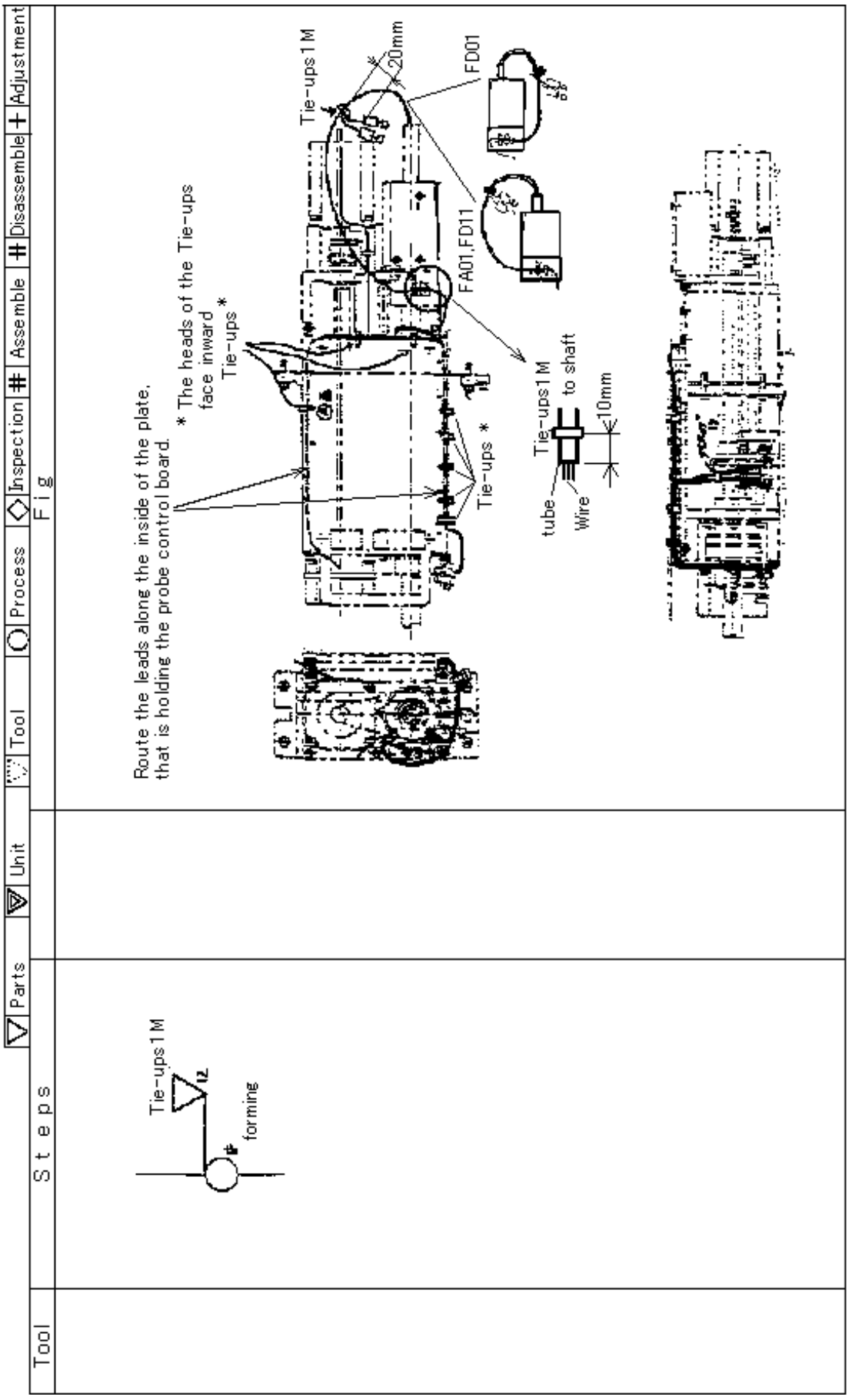


Fig7 Assembly procedure chart 4

Parts | Unit | Tool | Process | Inspection | Assemble | Disassemble | Adjustment

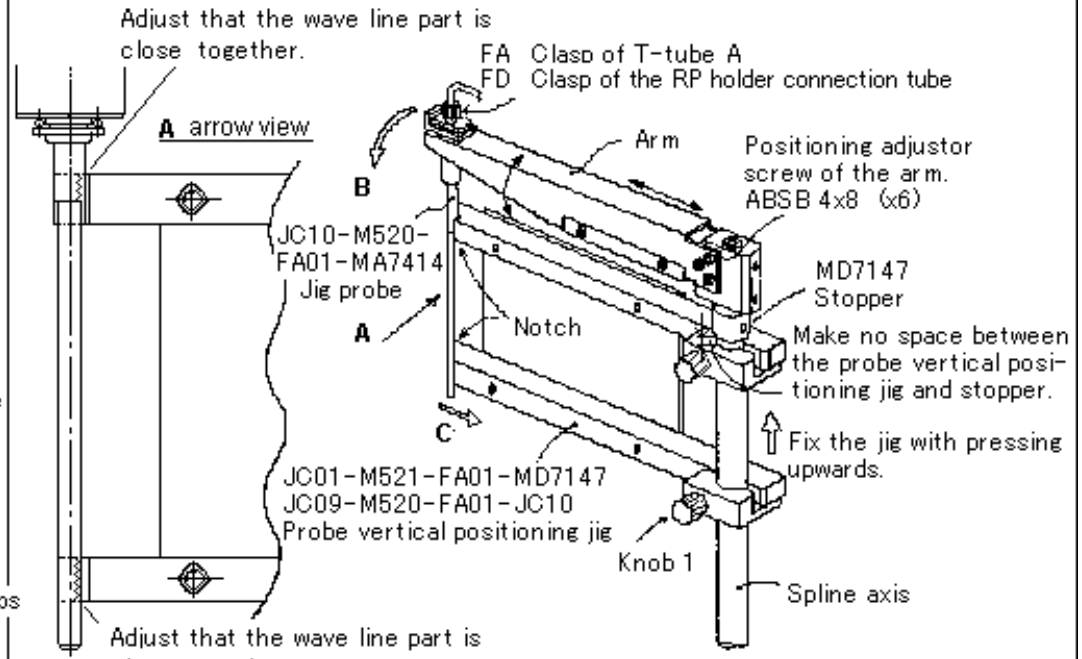
Tool	Steps		Fig
FA: JC01-M521 -FA01 -MD7147 FD: JC09-M520 -FA01-JC10 FA,FD: JC10-M520 - FA01 -MD7414	Prove vertical positioning jig Check that the positioning adjusterscrews are loosening before attaching the probe vertical positioning jig. Jig probe Positioning adjustnent of the arm Jig probe .Probe vertical positioning jig	Make no space between the probe vertical positioningjig and stopper ☆The jig probe is Φ3.4in diameter. In order to prevent the jig probe from bending, attach the jig probe in the place from which the notch of the probe vertical positioning jig separated, FA : and fasten the claps of the T-tube A. FD: and fasten the claps of the RF holder connection tube tightly. Adjust that the wave line part in the A arrow view is close together so as to make no space. In order to prevent the jig probe from bending, fix the arm for each screw with a bundle little by little equally. The degree of parallel between the spline axis and the probe is taken out attaching the jig	 1) Loosen the knob 1, attach the probe vertical postiioning jig to the spline axis, and fix the jig fastening the knob1 so as to make no space between the axis and MD7147(stopper). 2) Attachthe jig probe (fasten the clasp of the T-tube A) , loosen the positoning adjustor screws of the arm: ABSB 4x8 (x6), and adjust positioning that wave line part is close togeter. (Refer to A arrow view) 3) Rotate the arm to the direction B , check that the bottom end of the jig probe is not put back when the jig probe is removed. from the notch of the probe vertical positioning jig, and once again return the jig probe to the notch, then fasten the screws tightly.

Fig8 Assembly procedure chart 5

▽ Parts | ▽ Unit | ♡ Tool | ○ Process | ◇ Inspection | # Assemble | # Disassemble | + Adjustment

Tool	Steps		Fig
JC04-M520-AA01-MD7147 (catcher) JC03-M520-AA01-MD7147 (probe)	FA probe down limit position adjustment.	< Adjust that the jig probe is between the MAX and the MIN of the catcher.	FA probe down limit positioning 1) Attach JC04-M520-AA01-MD7147 to CB. (Refer to Fig 1) 2) Initialize FA01. 3) Rotate FA01 to sample aspiration position, and go down. 4) Attach the jig probe, adjust the height of the aem with the probe touching the intermediate position of the jig (refer to the Fig 2) attached on CB, and fix it. Afterwards, confirm that the MAX position can not go througt and the MIN position can do.

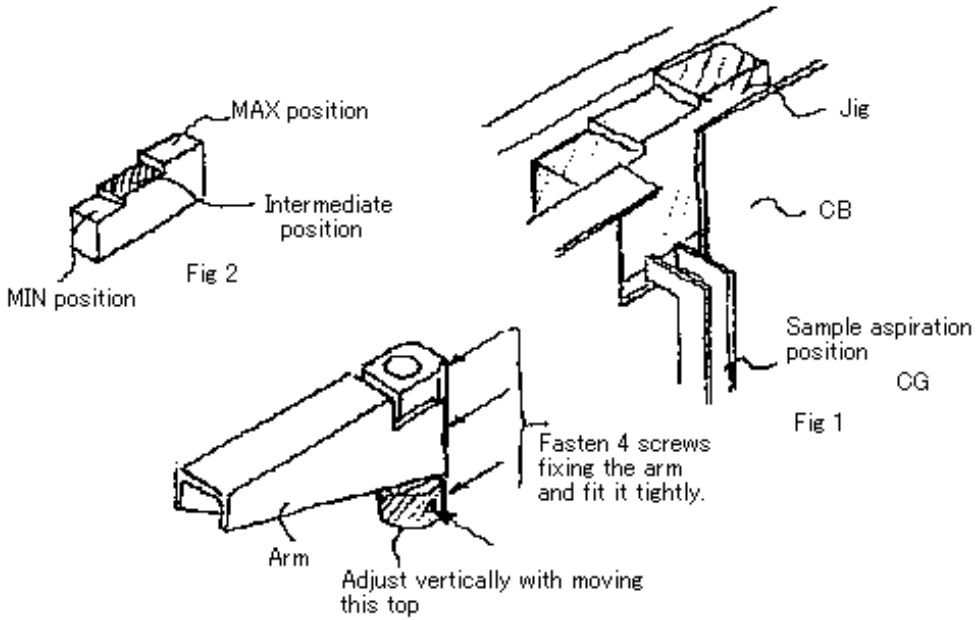


Fig 9 Assembly procedure chart 6 (FA probe)

▽ Parts ▽ Unit ▽ Tool ○ Process ◇ Inspection # Assemble # Disassemble + Adjustment

Tool	Steps		Fig
JC03-M520-AA01-MD7147 (catcher and probe)	FD probe down limit position adjustment.	◦ Adjust that the jig probe is between the MAX and the MIN of the catcher.	FD probe down limit positioning 1) Initialize DA. 2) Attach JC03-M520-AA01-MD7147 to DA. (However don't attach the jig probe) (Refer to Fig 1) 3) Initialize FD. 4) Rotate FD to reagent aspiration position, and go down. 5) Attach the jig probe, adjust the height of the arm with the probe touching the intermediate position of the jig (refer to the Fig 2) attached on DA, and fix it. Afterwards, confirm that the MAX position can not go througt and the MIN position can do.

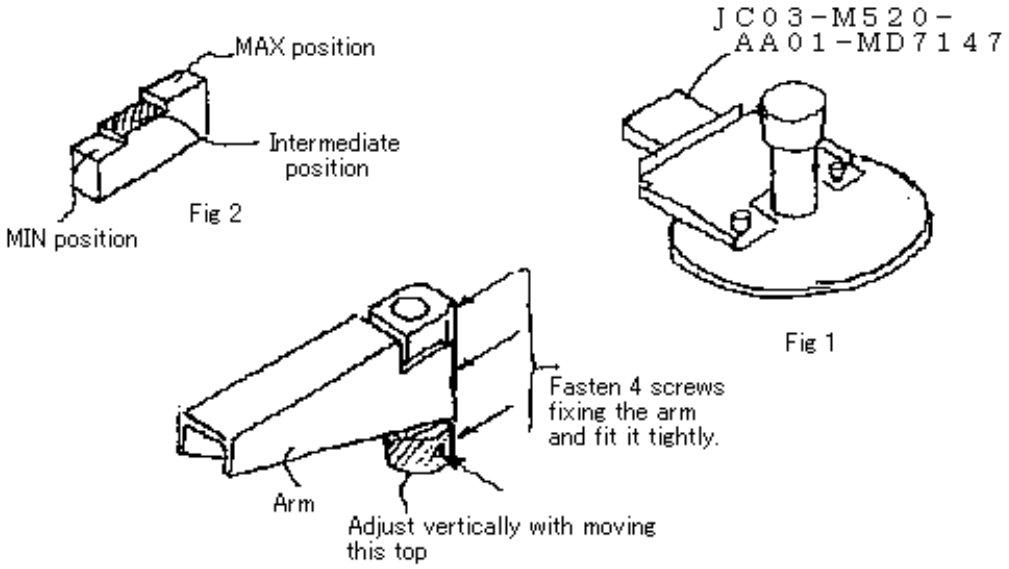


Fig 10 Assembly procedure chart 17 (FD probe)

2002. 04. 19. DIAGNOSTIC SYSTEM DIVISION OLYMPUS OPTICAL CO., LTD.
Written by Sato Ryoji and Ogawa yuji

2002.7.4

AU640 Countermeasure for level detection failure (Cable disconnection)

Mishima Olympus Service Group

AU640 Countermeasure for level detection failure (Cable disconnection)（CMNAU640-027, ECN521-132）is delayed due to preparation for repair parts and Jigs. Mishima Olympus service Group would like to announce a tentative action for this problem until we provide the necessary parts. Additionally, we inform you of the caution and information.

1. Target Serial No. Before ***0888

Modified Unit Revision MU5501 (M521-FA01) 03B -> 04C

MU5502 (M521-FD01) 04C -> 05D

MU5503 (M521-FD11) 04C -> 05D

Initial Supply Quantity Units/ Parts/ Jigs

	FA01/FD01/FD11 unit	Cable parts set	jigs set
OAI	9 sets	30 sets	2 sets
ODH	none	20 sets	3 sets
OSP(Incl. OML)	2 sets	6 sets	2 sets
Taiwan	1 set	5 sets	1 set
China	3 sets	20 sets	3 sets
Korea	1 set	5 sets	1 set
Australia	1 set	2 sets	1 set

CM Parts (per 1 instrument)

FA/FD unit modification parts

（3x MU6860（Plates/ tube/ Sleeve set）, 1x MU6853(FA Cable set), 2x MU6854(FD Cable set)）

AA fixing plate for Magnetic core (3x MU6830（Harness fix Ass'y））necessary at customer site

(Parts order, etc)

When you need the additional parts, please send the order to Representative address for Service Group by E-mail. The expired date is 2 years from CMN issued date. Service Group will check with necessary quantity and will not send if we receive the order more than the necessary quantity.

(Order No. for Jigs)

KCM0322 FA Probe Verticality Jig JC01-M521-FA01-MD7147

KCM0812 FD Probe Verticality Jig JC09-M520-FA01-JC10

KCM0317 FA/FD Jig Probe JC10-M520-FA01-MD7414

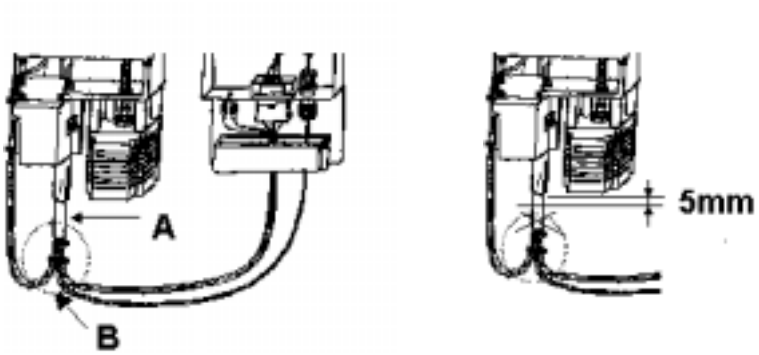
~~FA Sample dead volume JC04-M520-AA01-MD7147~~ (For manufacture) for Field KCM0805

KCM0805 FA Sample dead volume JC09-M253-AA01-ME0720 ---Common with AU2700

KCM0806 FD Reagent dead volume JC03-M520-AA01-MD7147 --- Common with AU2700

KCM0324 Elco connector pin remover Kyosera-Elco 06-1002-010

2. Tentative action (Prevention)



The cause of cable disconnection is too long white protection tube at A on the above figure. When the probe is down, the stress is concentrated on B and the cable at B is disconnected. Cut the protection tube and cable tie to prevent the problem.

(1) Cut cable tie at B.

(2) Cut the white tube and remaining 5mm from metal shaft.

(3) Check interference with the parts around the cable during movement. If there is interference, cover the cable or the other parts by the vinyl tape or soft material. Especially for pulse motor driver PCB, there is risk to be interfered, the solder side of the PCB should be covered by wide tape, etc.

(Note 1) Even if FD can be maintained about this tentative action, we recommend to apply the cut tube with dismounting unit.

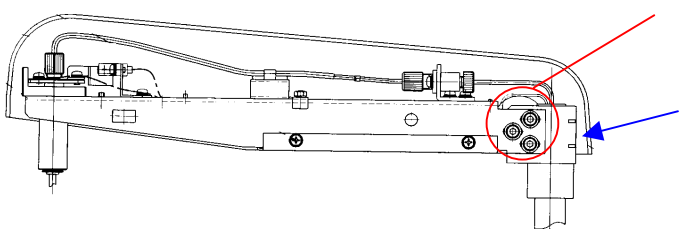
(Note 2) The difference of the occurrence between instruments is not only caused by the margin of the cable length. It may be related the set volume of sample and reagent. If the customer set much volume, the frequency of going to low limit is not often. Setting much volume may help to prevent the occurrence of the problem.

(Note 3) Please refrain from exchange of modified rotation unit as a prevention measure. We mind that the rotation unit will be lack on stock, so, prevention measure should be cutting the protection tube and cable ties.

3. Attention for Countermeasure

(1) Probe Verticality Jig

It is possible to remove the cable without loosing 6 pcs of hexagon (AB) screws for arm and block. You just need to loose 2 pcs of small (ACU) screw at side of block. Remove Teflon tubing first, pull up cable through the block, and take out the cable through the gap between arm and block to the level detection PCB side.



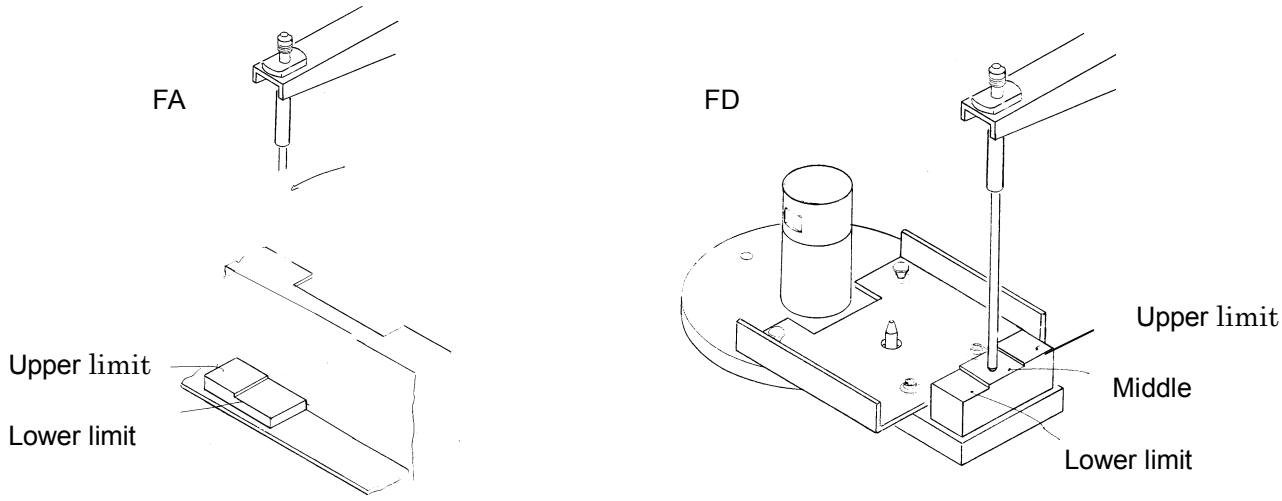
Don’t loose arm fix screws.
(6 x AB screw)

Take out the cable with loosing 2 x ACU screws at block, pull up with arm and block.

Stand is not really necessary , it is possible to do the work on table.

(3) Dead volume jig

Adjust dead volume with the jig as following figure.



FA Target of height is 8.3mm from belt surface

（Jig for field）(KCM0805)JC09-M253-AA01-ME7020 ---Common with AU2700

Jig probe 190mm

Jig block height Upper limit 8.5 +/-0.02mm, Lower limit 8.0 +/-0.02mm

（Jig for manufacture） JC04-M520-AA01-MD7147

Jig probe 150mm (Real probe 190mm)

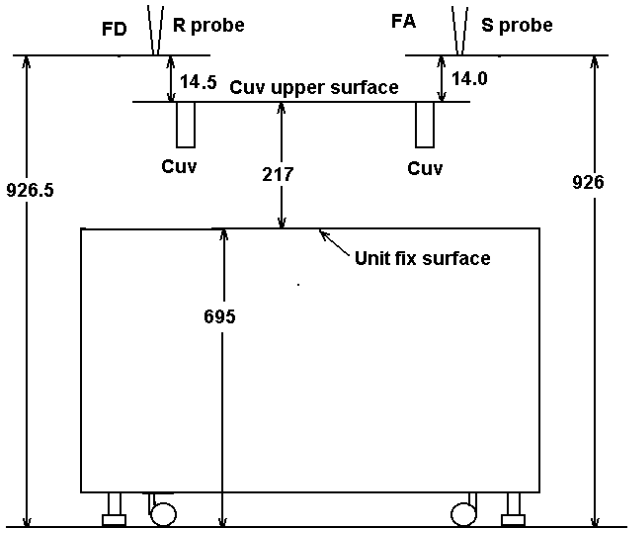
Jig block height Upper limit 48.5 +0/-0.1mm, Middle 48.3 +0/-0.1mm, Lower limit 48.0 +0/-0.1mm

FD Target of height is 3mm from reagent tray base

(Jig for field / manufacture)（KCM0806）JC03-M520-AA01-MD7147 --- Common with AU2700

Jig probe 150mm (Real probe 190mm)

Jig block height Upper limit 11.15 +0/-0.05mm, Middle 10.95 +/-0.05mm, Lower limit 10.75 +0.05/-0mm

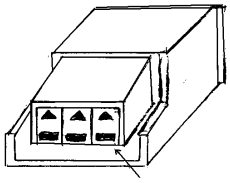


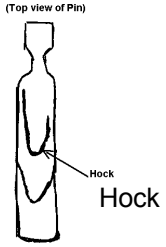
S/R probe upper position height

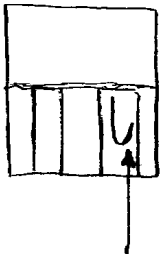
Distance on design 14.0/ 14.5mm

S/R probe upper position height is 14.0/ 14.5mm distance on design. (Range is +/-0.5mm)
The method of the adjustment on service manual is not using dead volume jig and it adjusted with distance on cuvette. However, there is the fear that an error produces in height of lower point neighborhood in this method. Same as a factory, adjust the dead volume with the dead volume jig as a standard in future, and it is assumed that an upper point identifies. The level that does not still influence data even if adjustment of upper point is rough, and probe height in cuvette aims at height of 3mm from a surface, and around 2mm change into being good this height. From our experience, the height at upper position is near to low limit in case the probe height is adjusted by dead volume jig.

（4）Method to remove Elco pin (Green connector)



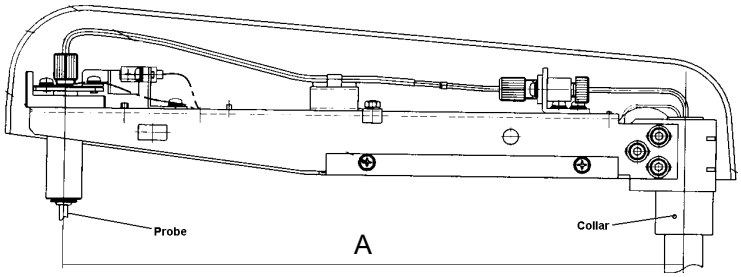




Tool

Insert the elco pin remove tool or needle (like clip) from the right side of pin's hole of elco housing.
Pull out cable and pushing pin hock.

（5）Distance between probe and shaft

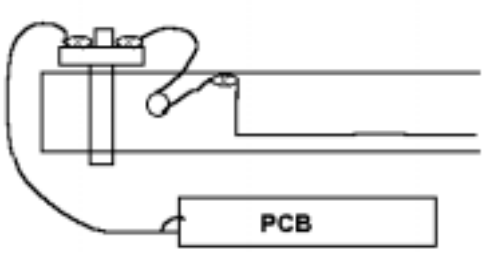


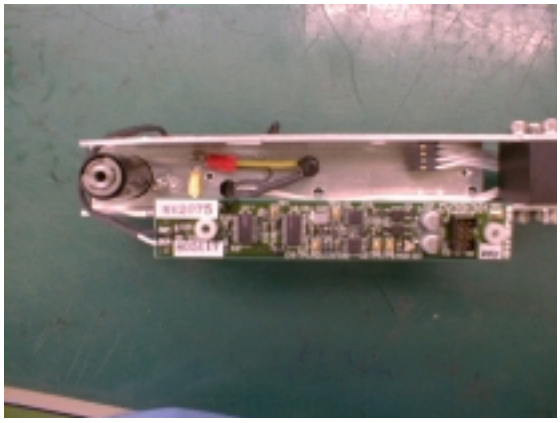
AU400/ 640 (Shaft collar diameter 18mm, S/Rprobe diameter 3.5mm)
AU640 FD01/ 11 160mm （AU600 FA, FD01/11 160mm）
AU640 FA 260mm
AU400 FA, FD 210mm

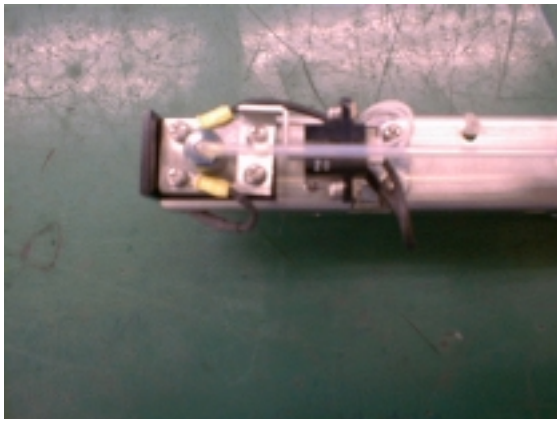
(6) Compatibility of level detection PCB

Difference between probe transfer unit of old model (M521-FA01,FD01, FD11) after modification and unit of UG model (M526-FA01,FD01, FD11) is only level detection PCB and its fixing method. And the difference of level detection PCB is only varistor is not on board (old model) or on board (UG model), and there is compatibility in function. Basically, M521 PCB should be used on old model, and M526 PCB should be used on UG model. In case emergency, it is possible to use each PCB mutually.

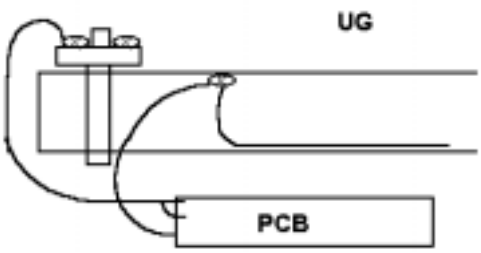
（Old model）

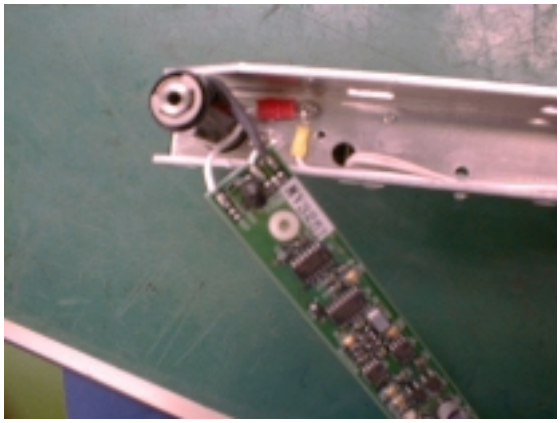






（UG model）





ENGINEERING CHANGE NOTICE (■English / ■Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No. : 521-0140	REV.	PAGE
AU640	Optional retrofits for the AU640	■ DCN □ TCN	ECR No. : — CMN No. : —	A	01/09

DATE :	ISSUED BY :	APP.	Taichi Banno
Mar/25/2002	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO., LTD	APP.	A.Toyama
		CHK.	S.yoshinari
		DSGN.	M.nichogi

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE	DOCUMENT TO BE REFERRED :
□ ALL ■ PART OF "SHIPPED"	■ PERMANENT	EC No. : 521-0119 521-0141	
□ FROM NEXT SHIPMENT	□ TEMPORARY UP TO	RISK ANALYSIS	CLAIM CARD TO BE REFERRED :
(# ,TIME Feb/2002)	□ SPECIAL	(■Yes □No)	

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB		UP	DW	NO
M521-ANL11	MU5442	D5	D6	M521-OPR01	MU6827	MU6827	–	00A	–	–	–		–	–	–
M521-ANL21	MU5443	D5	D6												

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US : USABLE RP : REPAIR AB : ABANDON

1. Reasons of change
2. Contents of change
3. List of articles for modification
4. List of jigs , tools , inspection apparatus for modification
5. Modification method & work load
6. List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? □Yes ■No)

If Yes , provide explanation :

PROCEDURAL AND OPERATIONAL CHANGES (Any procedural or operational chan □Yes ■No)

If Yes , provide description :

LABELING CHANGES (Any changes to Service or Technical documentation? □Yes ■No)

If Yes , provide information :

☆To : Technical Service Department (OT) Please fill in this space.

ENGINEERING CHANGE NOTICE

EC NO.	PAGE
521-0140	02/09

1. Reasons of change

The specification of analyzer is changed (Reduce of detergent/water consumption).

2. Contents of change

On the occasion of introducing the upgrade equipment of AU640 into the market,
we have dicided to add a new optional kit.
The optional kit which reduce a detergent/water vol. consumption is included in the AU640 components to retrofit.

3. List of articles for modification

MU6827 (M521-OPR01) qty.1

4. List of jigs , tools , inspection apparatus for modification

Standard tools

5. Modification method & work load

Refer to pages 3 to 9 for the modification method.
work load : 7H

6. Others

It is necessary to install a new system program simultaneously or beforehand.
Refer to PRE-REQUISITE ECN;
OAI: 521-0119
ODC: 521-0141

1. Procedure of the modification method.

① The check of the contents of an optional kit(MU6827).
② Modification of analyzer.
③ Adjustment and a check of analyzer.

2. Details of the modification method.

① The check of the contents of an optional kit(MU6827).
1) Check whether the following are enclosed.
- Sub assembly A: M cup (Mix 1 water)
- Sub assembly B: M cup (Mix 1 detergent)
- Sub assembly C: M cup (Mix 2 water)
- Sub assembly D: M cup (Mix 2 detergent)
- Sub assembly E: a part of piping (water)
- Sub assembly F: a part of piping (detergent)

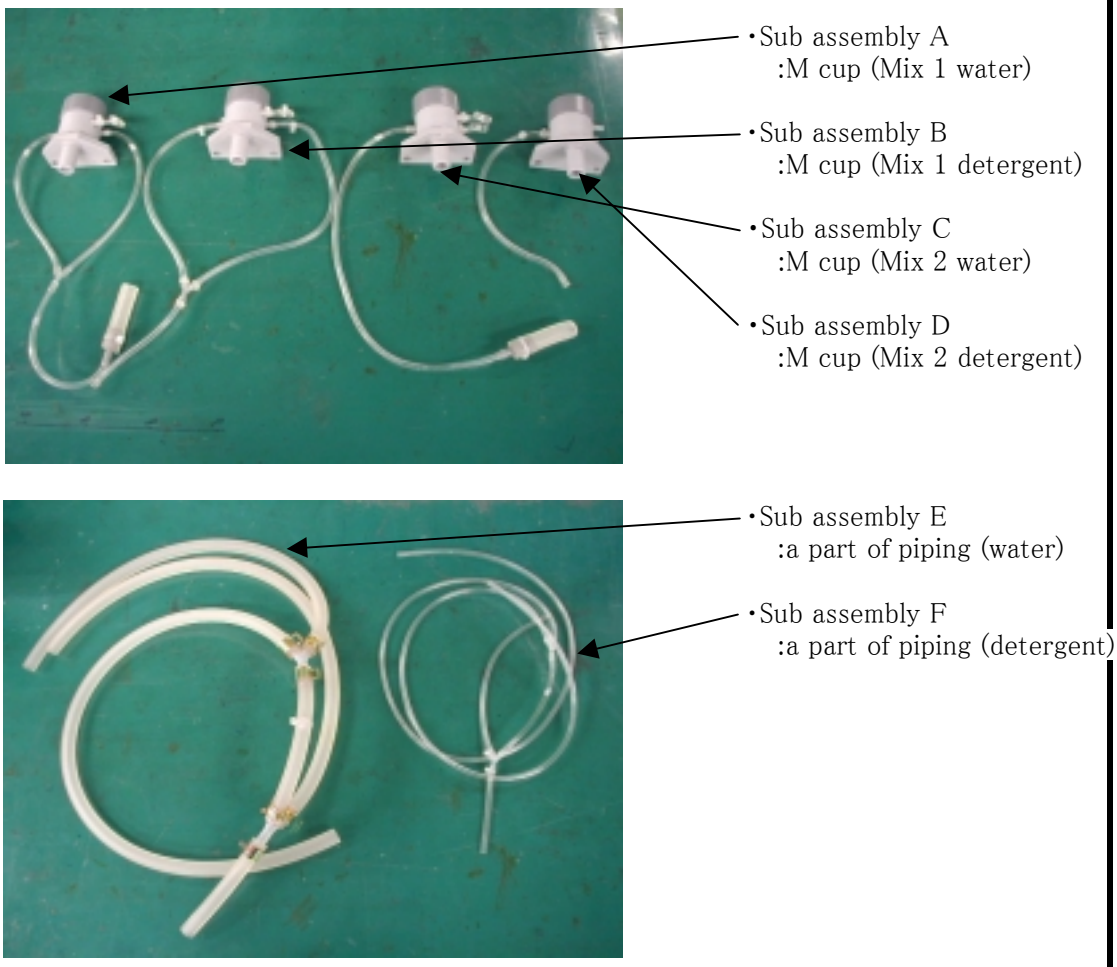

・Sub assembly A
:M cup (Mix 1 water)
・Sub assembly B
:M cup (Mix 1 detergent)
・Sub assembly C
:M cup (Mix 2 water)
・Sub assembly D
:M cup (Mix 2 detergent)
・Sub assembly E
:a part of piping (water)
・Sub assembly F
:a part of piping (detergent)

Fig.1 Contents of the option kit.

② Modification of analyzer.

1) Power OFF completely.
2) The covers of analyzer and mixing bars is removed.
   - Front covers
   - Rear covers
   - Upper surface covers

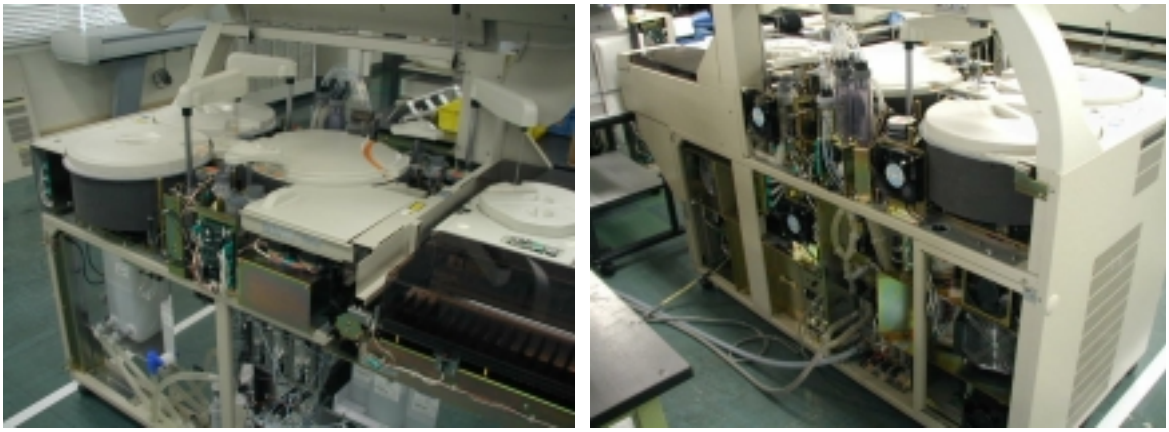


Fig.2 The cover to remove

3) Water is drained from wash water line and dilution detergent B line.

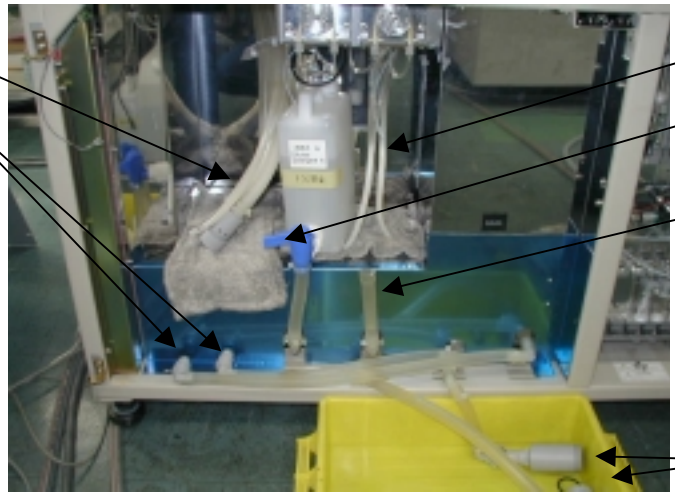


Fig.3 Water is drained.

- Wash water line.
  1. C insert is removed from the wash water tank.
  2. Dismantle the filter ass'y, and receive the drained water.
  3. The tube A in a tank is pulled up from the wash water surface.

- Dilution detergent B line.
  1. The cock of the dilution B tank is shut.
  2. Connection of the tube B is separated from the cock.
  3. The tube B is turned downward, and water is discharged.
  4. The tube C in a tank is pulled up from the detergent B water surface.

4) The old mixer wash tanks is removed together with piping to the valve ass'ys, and the tube which is piped to port "IN" of the valve is removed.
- Mix 1 wash water discharge valve(V11)
- Mix 1 detergent B discharge valve(V41)
- Mix 2 wash water discharge valve(V12)
- Mix 2 detergent discharge valve(V45)

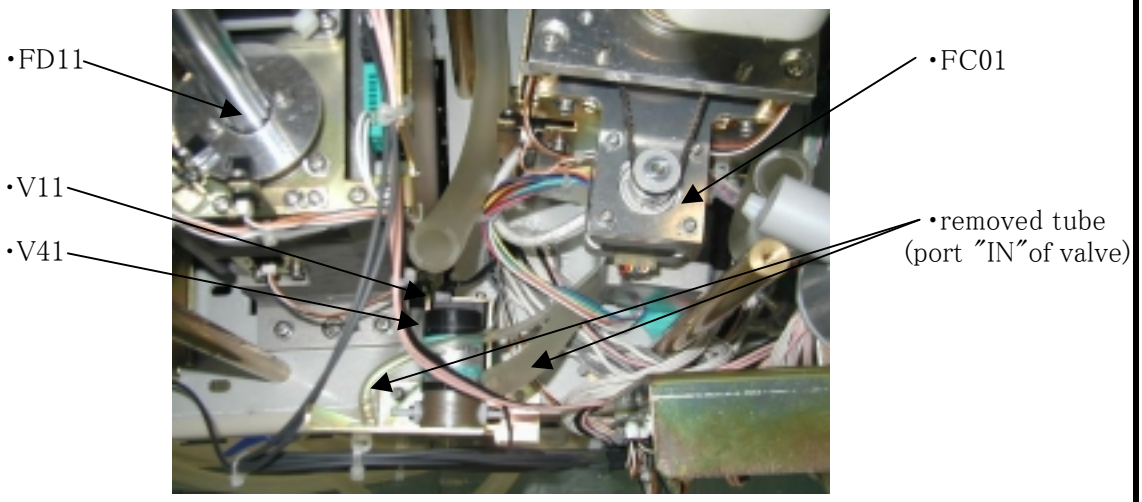


Fig.4 After removing a old mixer wash tank (Mix 1).

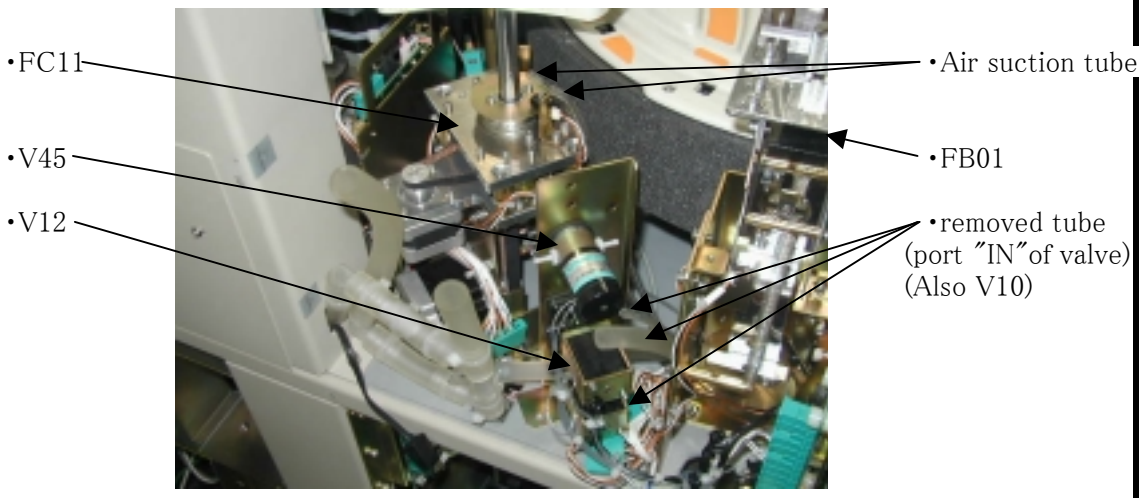


Fig.5 After removing a old mixer wash tank (Mix 2).

5) Sub assembly A to D is fited by the screws and SKB.

6) Piping befor the valve ass'y is removed.

1. Remove the FD01 unit and Fan ass'y on the JD unit.
2. Remove the aspiration valve unit and it is avoided by the SKB.
3. Remove the piping of wash water line and dilution detergent B line.
4. Exchange Sub assembly E and Sub assembly F.

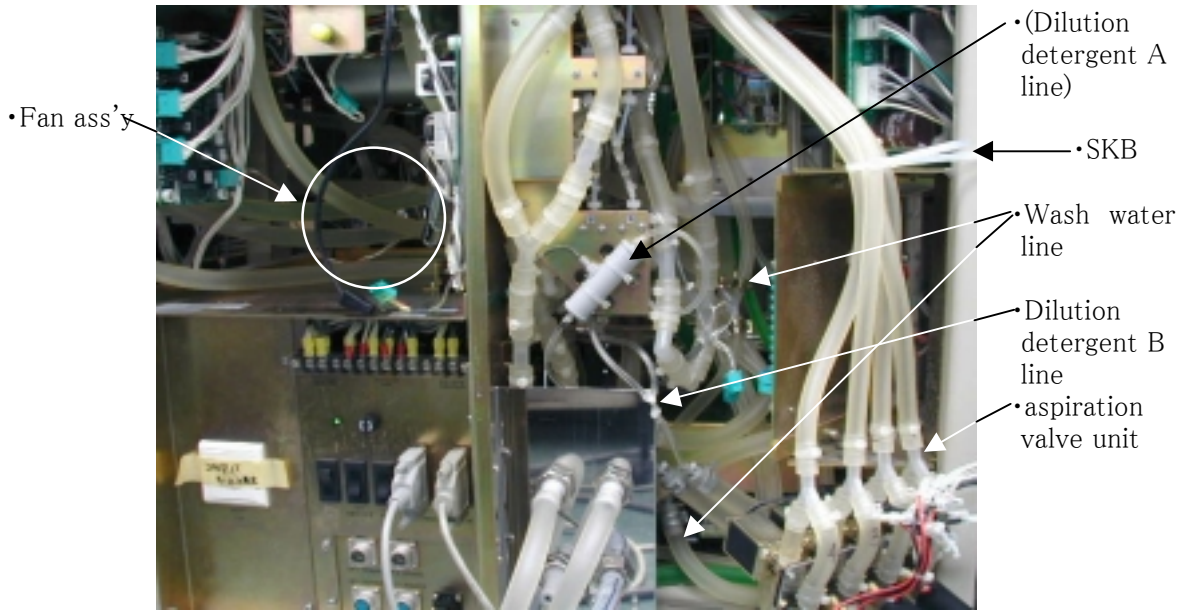
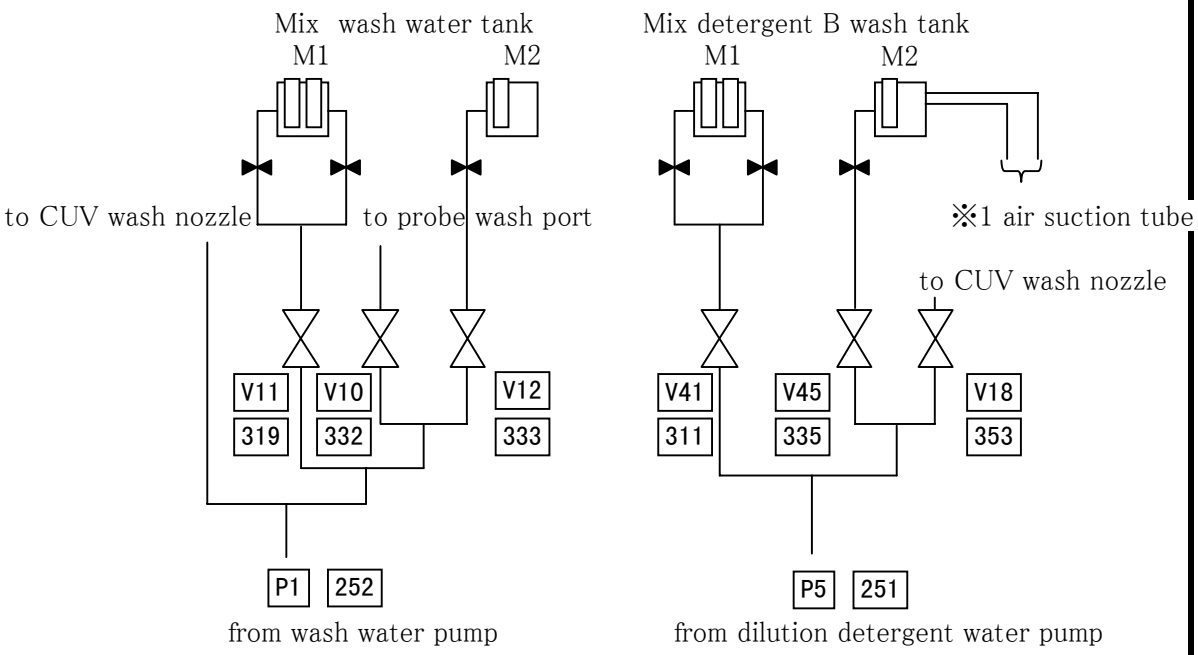
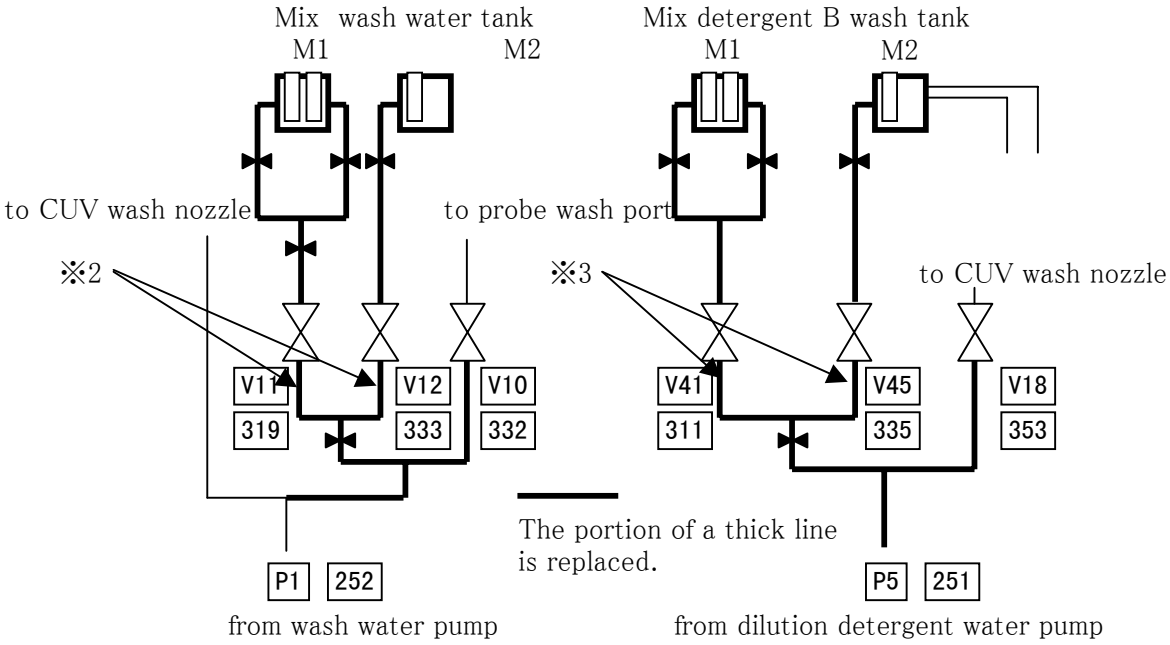


Fig.6 Piping befor the valve ass'y is removed.



※1 Caution: The air suction tube is connected to the vacant mouthpice of Mix 2 detergent B wash tank.

Fig.7 Piping figure befor retrofit



※2 Caution: The longer one of the line containing orifice is connected to V11(front side).
※3 Caution: The longer one of the line containing orifice is connected to V41(front side).

Fig.8 Piping figure after retrofit

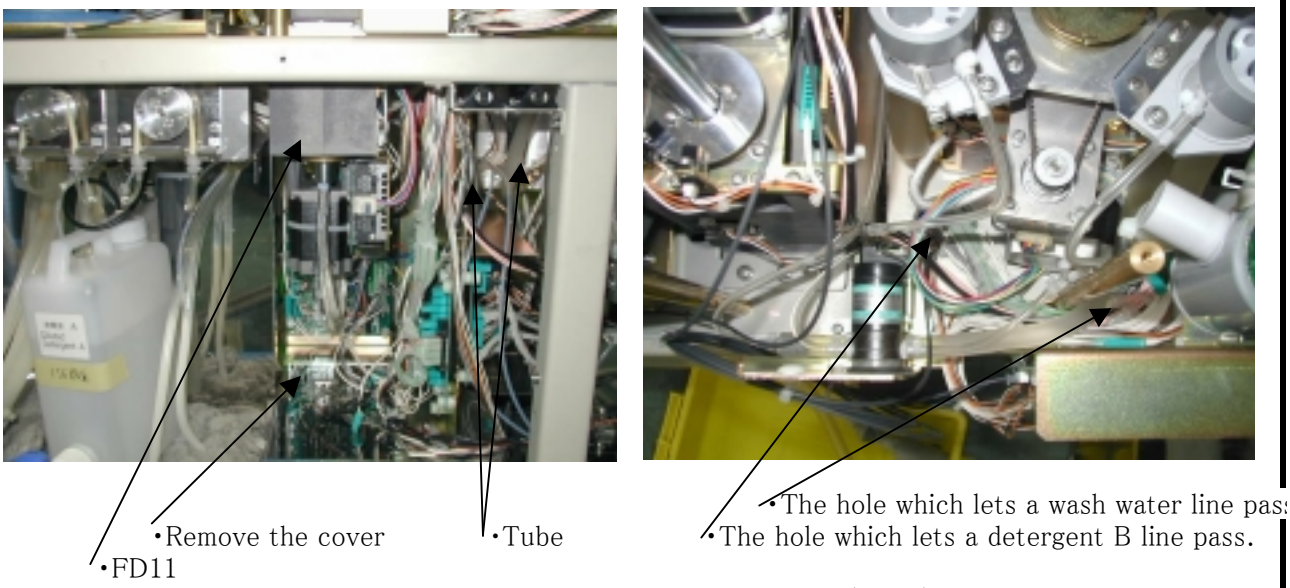


Fig.9 The method of piping (Mix 1).

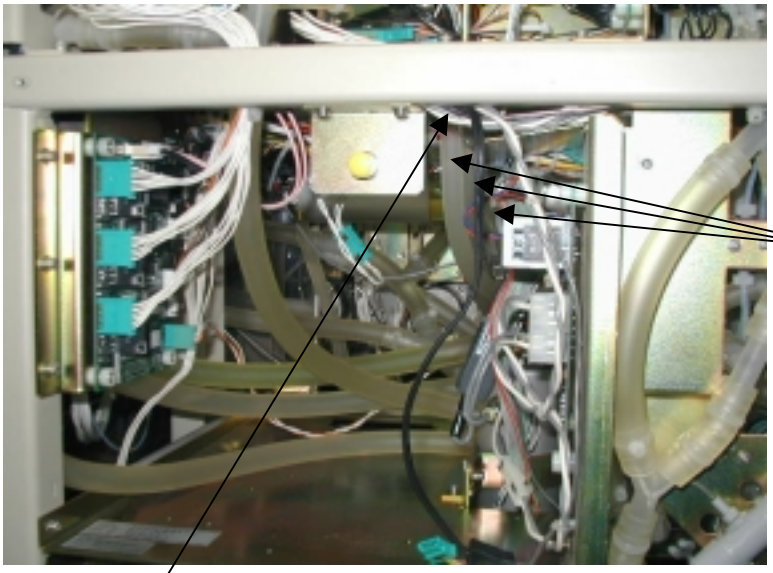


Fig.10　The method of piping (Mix 2).

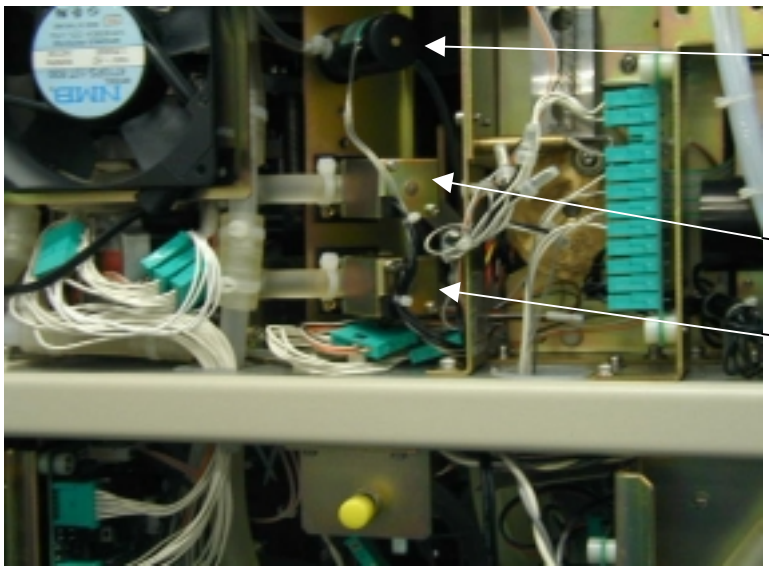


Fig.11　The method of piping (Mix 2).

③ Adjustment and a check of analyzer.

1) Power ON.
2) When the mixing bars is rotated at an upper point, check whether it is eccentricity visually using ANL DIAG. In this case, mixing bar is exchanged.

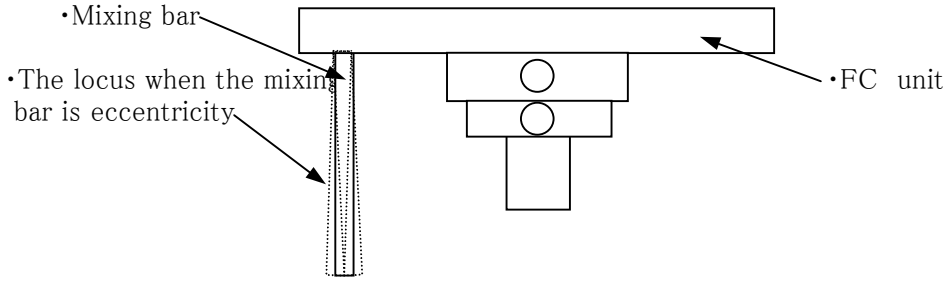


Fig.4 The state where the mixing bar is eccentricity.

3) Wash tank position is adjusted: (Service Manual F30-8)
- Remove the mixing bar.
- Initialaze the FC unit.
- Move the FC unit down.
- Install the mixing bar and adjust each wash tank so that it is center of drainage.

Standerd:

The mixing bar does not touch a wash tank.
(A mixing bar is at the center of the hole of a wash tank visually.)

Ajustment method:

Loosen the screws A fixing the wash tank and adjust each wash tank.

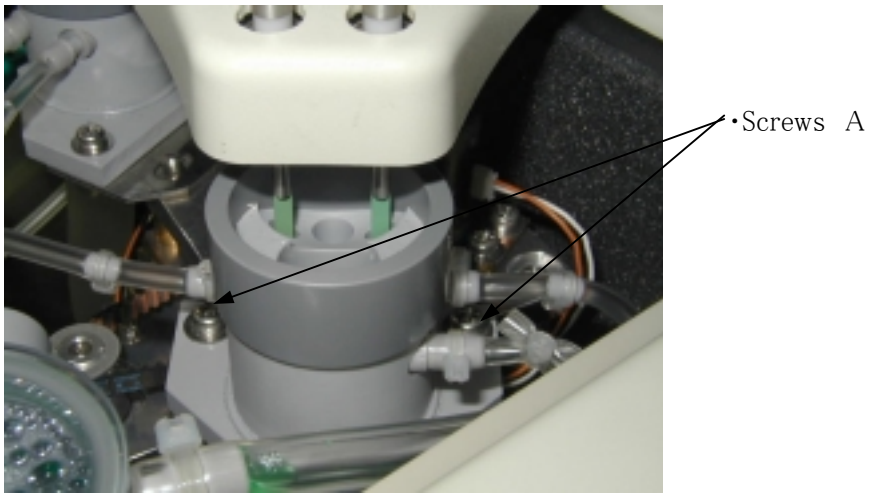


Fig.5 Wash tank position is adjusted.

4) Confirm about the following items using ANL DIAG "Mix Sequence".
- The mixing bar and the wash tank have not touched in all positions.
- While mixing bar is washed , washing water should be overflowing from the washing hole.

5) At the last, the covers of analyzer is fitted.

ENGINEERING CHANGE NOTICE (■English / ☐Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No. : 521-0142	REV.	PAGE
AU640	System Program for Asia etc VersionUP(V4.2)	■ DCN ☐ TCN	ECR No. : — CMN No. : AU640-031	A	1/46

DATE :	ISSUED BY :		
May/27/2002	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO., LTD	Approved	*A.Toyama*
		Checked	*H.Yamamoto*
		Designed	*S.Iguchi*

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE	DOCUMENT TO BE
■ ALL ☐ PART OF "SHIPPED" ☐ FROM NEXT SHIPMENT (# ,TIME May/30/2002)	■ PERMANENT ☐ TEMPORARY UP TO ☐ SPECIAL	EC No. : 521-0145 526-0004	REFERRED :
		RISK ANALYSIS (☐Yes ■No)	CLAIM CARD TO BE REFERRED :

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB		UP	DW	NO
M521-ACC41	MU5475	B0	B0	PROGRAM	MV3311	MU8301	-	New			○				○
M521-CSS41	MU5480	B0	B0												

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US : USABLE AB : ABANDON
RP : REPAIR

1. Reasons of change
2. Contents of change
3. List of articles for modification
4. List of jigs , tools , inspection apparatus for modification
5. Modification method & work load
6. List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐Yes ■No)

If Yes , provide explanation :

PROCEDURAL AND OPERATIONAL CHANGES (Any procedural or operational cha ☐Yes ■No)

If Yes , provide description :

LABELING CHANGES (Any changes to Service or Technical documentation? ☐Yes ■No)

If Yes , provide information :

*To : Technical Service Department (OT) Please fill in this space.

ENGINEERING CHANGE NOTICE

1. Reasons of change

Problem solution, specification change and addition of the new program(MV3311).
The new program(MV3311) have already been made for M526(new type of AU640).
Now, New Version of MV3311(Ver4.2) can be adapted to M521(old type of AU640).
Therefore, old program(MV2554) is replaced by MV3311 to unify the program.

2. Contents of change

Update system program from MV2554 to MV3311 Ver4.2.
The attached Software information includes the history of both MV3311 and MV2554.
Please refer to the all of attached History Table A and B.(Page5 - 38)
- History Table for MV2554(Ver3.0 & Ver3.1) : Page 5 - 22
- History Table for MV3311(Ver4.2) : Page6,23 - 38

(The 1st version of MV3311 is Ver4.0.
And it includes from No.1 to No.67 on History Table B for MV3311 Ver4.2.
This is attached to clear up the difference between M521(old type of AU640)
and M526(new type of AU640))

3. List of articles for modification

MV3311 Ver4.2

4. List of jigs , tools , inspection apparatus for modification

5. Modification method & work load

Install the system program of MV3311(Ver4.2). (Refer to Page39 - 46)
Measure more than 30 Samples to confirm the instrument working correctly.
Work load : 1.0 H

6. List for comparison between new and old part number
(Repair and Spare parts only)

＜SOFTWARE CLASS＞

SOFTWARE CONFIGURATION	SET NO.	SET NO.	SET NO.	SET NO.	SET NO.	SET NO.	SET NO.	SET NO.	SET NO.	SET NO.
	01	02	03	04	05	06				

＜MEDIA CLASS＞

MEDIA TYPE		Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.	Ver.. Rev.
AU640 SYSTEM PROGRAM CD−ROM	MV2554	1. 0	1. 1	2. 0	2. 1	3. 0	3. 1				
ANL IPL ROM	MV2181	1. 00	←	←	←	←	←				
ISE IPL ROM	MV2191	1. 00	←	←	←	1. 2	←				
Photometer Control ROM	MV1037	2. 1	←	←	←	←	←				
ISE／B. R. COM. ROM	MV2611	1. 0	←	←	←	←	←				
LAN Master Control ROM	MV1030	3. 0	←	←	←	←	←				
R1／R2 REF Control ROM	MV2352	1. 0	←	←	←	←	←				
SProbe Control ROM	MV2351	1. 0	←	←	←	←	←				
R1, R2 Probe Control ROM	MV2330	1. 0	←	←	←	←	←				
S／R1, R2 MIX Control ROM	MV2353	1. 0	←	←	←	←	←				
Rack Feeder／Stat Control ROM	MV2348	1. 0	←	←	←	1.0or1.1 *1	←				
Rack Receiver Control ROM	MV2349	1. 0	←	←	←	←	←				
S／R1／R2 Syringe Control ROM	MV2350	1. 0	←	←	←	←	←				

＜COMMON CLASS＞

NOTE	Not Release	First Release Ver.1.1	Top5 Spec. Change Req.	Y2K solution	RealTime R Remain (Reject)	Spout Bug is fixed (No release)				
UP DATE	S. Iguchi	H. Yamamoto	S. Iguchi	S. Iguchi	H. Yamamoto	H. Yamamoto				
	Oct. 19. 1998	Jan. 06. 1999	Oct. 25. 1999	Nov. 24. 1999	22. Jan. 2002	05. Apr. 2002				
RELEASED	S. Iguchi	H. Yamamoto	S. Iguchi	S. Iguchi						
	Oct. 23. 1998	Jan. 08. 1999	Nov. 10. 1999	Nov. 26. 1999	. .	. .				

SOFTWARE HISTORY TABLE A [MEDIA]	SOFT. TYPE	M521 Asia etc Standard Software	TYPE NO.	MP0176Q7	PAGE	1	NEXT PAGE	−

*1 : No use for update in market except M525 (M521 with LA)

<Software Class>

SoftWare Configuration	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.
	1	2								

<Media Class>

Name	Type	No.	Ver.Rev.	Ver. Rev.	Ver.Rev.	Ver.Rev.	Ver.Rev.	Ver.Rev.	Ver. Rev.	Ver. Rev.	Ver.Rev.	Ver. Rev.
AU640 System Program	CD-R	MV3311	4.0	4.2								
ANL IPL	ROM	MV2181	1.0	←								
ISE IPL	ROM	MV2191	1.2	←								
Photometer Control	ROM	MV1037	2.2	←								
ISE/BarCode Com. Control	ROM	MV2611	1.0	←								
LAN Mastaer Control	ROM	MV1030	3.0	←								
R1/R2 Ref. Control	ROM	MV2352	1.0	←								
S-Probe Control	ROM	MV2351	1.0	←								
R1/R2-Probe Control	ROM	MV2330	1.0	←								
S/R1,R2 Mix Control	ROM	MV2353	1.0	←								
Rack Feeder/Stat Control	ROM	MV2348	1.1	1.0or1.1 *1								
Rack Receiver Control	ROM	MV2349	1.0	←								
S/R1/R2 Cyringe Control	ROM	MV2350	1.0	←								

<Common Class>

NOTE		FirstVersion	Adapt to M521							
UP DATE		S.Iguchi Apr.09.2002	H.Yamamoto May.25.2002							
RELEASED		S.Iguchi Apr.09.2002	S.Iguchi May.27.2002							
SoftWare History Table A[Media]	Type	M521/526 Standard Software for Asia			No.	MP0290Q7	Page	1	NextPage	-

*1:No use for update in market except M525 (M521 with LA)

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV2552	3. 0			
M521 Program for ODC	MV2553	3. 0			
M521 Program for Asia	MV2554	3. 0			

No.	CONTENTS	REMARKS
1	[Specification change] Alarm message is changed.(add Rack No. and Cup Pos. information) And correct the order of the parameter in Alarm No.2142. 2131:ONLINE ERROR (Type of the errors) (RSno. - RackNo. - CupPos) 2135:ONLINE ILLEGAL TEXT CODE (Sno. - RackNo. - CupPos : Received Text Code) 2136:ONLINE ILLEGAL TEXT BLOCK No. (Sno. - RackNo. - CupPos : Previously received block identification No.-> Last received block identification No.) 2137:ONLINE ILLEGAL SAMPLE No. (Transferred Sno. - RackNo. - CupPos : Received Sno.) 2138:ONLINE ILLEGAL RACK No. (Sno. - Transferred RackNo. - Transferred CupPos : Received RackNo. - Received CupPos) 2140:ONLINE ILLEGAL GENDER TEXT (Sno. - RackNo. - CupPos : Sex Gender Received) 2141:ONLINE ILLEGAL AGE/MONTH (Sno. - RackNo. - CupPos : Received age Received month age) 2142:ONLINE ANALYSIS METHOD MISMATCH (Sno. - RackNo. - CupPos : Transferred Sample type <> Received Sample type) 2143:ONLINE SAMPLE No. MISMATCH(Transferred Sno. - RackNo. - CupPos<> Received Sno.) 2144:ONLINE RACK No. MISMATCH (Transferred Sno. : Transferred RackNo. - Transferred CupPos <> Received RackNo. - Received CupPos) 2145:ONLINE MISMATCH (Sno. - RackNo. - CupPos : Transferred S.ID <> Received S.ID) 2146:ONLINE TEST ITEM ERROR (Sno. - RackNo. - CupPos) 2147:ONLINE REPEAT ITEM ERROR (Sno. - RackNo. - CupPos: Original Sno.) 3220:SAMPLE EMPTY LEVEL DETECT (Sno.,ITEM,d,RackNo.,CupPos) 3238:CLOT SAMPLE DETECT (Sno.,ITEM,RackNo.,CupPos)	* ** ODC IPM Sep.8.00

NOTE	ISSUED BY
* :OAI Ver2.1では対応済み Already fixed in OAI Ver2.1 **:ODC Ver2.1では対応済み Already fixed in ODC Ver2.1	S.Iguchi Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV2552	3. 0			
M521 Program for ODC	MV2553	3. 0			
M521 Program for Asia	MV2554	3. 0			

No.	CONTENTS	REMARKS
	[仕様変更] 以下の警報Noの詳細情報にﾗｯｸNo.とｶｯﾌﾟ位置を追加 同時に警報No.2142のﾊﾟﾗﾒｰﾀ順の誤りを修正。 2131:オンラインエラー (エラー種別) (RSno.-ﾗｯｸNo.-ｶｯﾌﾟPos) 2135:オンライン 規定外伝文識別コード (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos : 受信電文識別ｺｰﾄﾞ) 2136:オンライン 規定外データ区分No. (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos : 前回受信したﾃﾞｰﾀ区分No.->最後に受信したﾃﾞｰﾀ区分No.) 2137:オンライン 規定外サンプルNo. (送信Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos : 受信Sno.) 2138:オンライン 規定外ラックNo. (Sno.- 送信ﾗｯｸNo.- 送信ｶｯﾌﾟPos : 受信ﾗｯｸNo. - 受信ｶｯﾌﾟPos) 2140:オンライン 規定外性別 (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos : 受信性別) 2141:オンライン 規定外年齢･月齢 (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos : 受信年齢 受信月齢) 2142:オンライン 分析種別不一致 (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos : 送信分析種別<>受信分析種別) 2143:オンライン サンプルNo.不一致 (送信Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos<>受信S.No.) 2144:オンライン ラックNo.不一致 (送信Sno. : 送信ﾗｯｸNo.-送信ｶｯﾌﾟPos<>受信ﾗｯｸNo.-受信ｶｯﾌﾟPos) 2145:オンライン 不一致 (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos: 送信した検体ID<>受信した検体ID) 2146:オンライン 項目エラー (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos) 2147:オンライン 再検登録エラー (Sno.-ﾗｯｸNo.-ｶｯﾌﾟPos: 元検体番号) 3220:ｻﾝﾌﾟﾙ液面不足 (Sno.,ITEM,d,RackNo.,CupPos) 3238:ｻﾝﾌﾟﾙ詰まり検体(Sno.,ITEM,RackNo.,CupPos)	

NOTE		ISSUED BY
	* :OAI Ver2.1では対応済み Already fixed in OAI Ver2.1 **:ODC Ver2.1では対応済み Already fixed in ODC Ver2.1	S.Iguchi Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
2	[Problem Solution] STAT SET LED blink just before "After Measure" starting	* **
	[不具合対応] 分析後洗浄開始直前にSTAT SET LEDを点滅する様に変更	OT R&D
3	[Problem Solution] The work sheet is made in even the following case. In ID analyses and repeat run, the original S.No. in DPR is equal to the original S.No. in received text from HOST but the S.ID in DPR is different from the S.ID in received text from HOST.	* ** OT R&D
	[不具合対応] ID分析の再検において、HOSTから送信された応答の元検体S.No.が存在し、IDが異なる場合であっても、DPR上にﾜｰｸｼｰﾄが作成される。	

NOTE

* :OAI Ver2.1では対応済み　　Already fixed in OAI Ver2.1

** :ODC Ver2.1では対応済み　　Already fixed in ODC Ver2.1

ISSUED BY

S.Iguchi

Aug. 23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
4	[Problem Solution] When Report Format name is selected by Enter key from drop down list, parameter of Report Format is not properly displayed. [不具合対応] 報告書フォーマット名がリターンキー押下でリストから選択された場合、報告書フォーマットのパラメータ内容が正しく更新表示されない不具合修正。	OT R&D
5	[Problem Solution] When Test Name is selected by Enter key from drop down list, parameter of Specific Test Parameter is not properly displayed. [不具合対応] 項目別条件の項目名がリターンキー押下でリストから選択された場合、項目別条件のパラメータ内容が正しく更新表示されない不具合修正。	OT R&D
6	[Problem Solution] Even the method is END/END1, Max/Min OD parameter check when exiting the menu is performed. [不具合対応] END/END1測定の設定時においても、検量有効吸光度範囲の下限値＞上限値のパラメータチェックがされてしまう不具合修正。	OT R&D
7	[Problem Solution] After printer digit is changed from 136 to 80, even Report Format menu shows 80 as digits, but parameter check when exiting the menu indicates the parameter check error. [不具合対応] ﾌﾟﾘﾝﾀ桁数設定を136桁から80桁に変更した後、報告書ﾌｫｰﾏｯﾄを開いて80桁に桁数が、表示上正しく自動変更されているにも関わらず、画面を抜ける際のﾊﾟﾗﾒｰﾀﾁｪｯｸでｴﾗｰとなる不具合修正。	OT R&D
8	[Problem Solution] At Calculated Tests menu, constant value is entered but not test is selected, it does not allow to exit edit mode. [不具合対応] 係数を設定し、被演算項目を設定なしとすると、設定ﾓｰﾄﾞを抜けられなくなる不具合修正。	OT R&D

NOTE	ISSUED BY
	S.Iguchi
	Aug. 23. 01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV2552	3. 0			
M521 Program for ODC	MV2553	3. 0			
M521 Program for Asia	MV2554	3. 0			

No.	CONTENTS	REMARKS
9	[Problem Solution] At RB history graph display, if number of RB data count shown as X axis is different at each test, proper X axis count (10, 20 or 30) is not done. Always maximum count among the other test is used for graph display. [不具合対応] RBの来歴ｸﾞﾗﾌ表示で項目ごとの表示プロット数が異なると、項目ごとの表示スケールの最大値が正しく更新されない不具合修正。	OT R&D
10	[Problem Solution] If sample number is changed in Reaction data (OD) display menu and going back to graph display, the graph shows the one before sample number is changed with changed sample number. [不具合対応] ﾘｱｸｼｮﾝﾓﾆﾀのﾃﾞｰﾀ(Abs.列挙)表示画面にて、表示ｻﾝﾌﾟﾙNo.を変更してからｸﾞﾗﾌを再表示した場合、ｸﾞﾗﾌに表示されているﾃﾞｰﾀとｻﾝﾌﾟﾙNo.がずれる不具合修正。	OT R&D
11	[Problem Solution] When more than one Pending Lists are registered in Parameter menu, pending list is not properly printed. [不具合対応] 複数ﾍﾟﾝﾃﾞｨﾝｸﾞﾘｽﾄの属性ﾌｫｰﾏｯﾄがある場合、ﾍﾟﾝﾃﾞｨﾝｸﾞﾘｽﾄが正しく印字されない不具合修正。	OAI CC132-132
12	[Problem Solution] If index is changed when 90 indexes are existing already, reaction data that is stored in the past may not be shown. (Caution) ・The system, in which there are 90 indexes, needs to initialize reaction data in System Maintenance Menu. ・Use System Maintenance Menu after this version to initialize reaction data. ・Not initialize reaction data for no reaction data. [不具合対応] 90を超えてｲﾝﾃﾞｯｸｽを切り替えた場合、過去のﾘｱｸｼｮﾝﾃﾞｰﾀが参照できなくなることがある不具合修正。 (注意) ・既に90ｲﾝﾃﾞｯｸｽある施設ではｼｽﾃﾑﾒﾝﾃﾅﾝｽでﾘｱｸｼｮﾝﾃﾞｰﾀの初期化を行う必要があります。 ・ﾘｱｸｼｮﾝﾃﾞｰﾀの初期化には本ﾊﾞｰｼﾞｮﾝ以降で行うことが必要。 以前のﾊﾞｰｼﾞｮﾝでﾘｱｸｼｮﾝﾃﾞｰﾀの初期化は行わないでください。 ・ﾘｱｸｼｮﾝﾃﾞｰﾀの初期化はﾘｱｸｼｮﾝﾃﾞｰﾀが全く無い状態で行わないでください。	OT CCX32-006 CCA33-051 CCD33-008 CCL33-009 CCU33-074
13	[Problem Solution] In Reaction Monitor menu, QC/Cal number and so on that is entered information is discarded by changing to another tab(such as Normal or Repeat). [不具合対応] ﾘｱｸｼｮﾝﾓﾆﾀにて、QC/Cal No.等設定した情報が、タブ切り替えを行うと破棄されてしまう不具合修正。	OT R&D

NOTE	ISSUED BY
	S.Iguchi
	Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
14	[Problem Solution] At Login Name menu, if Log-in name is deleted and exiting the menu, confirmation message that says “This change will not be enabled until next power on.” is not displayed. [不具合対応] ﾛｸﾞｲﾝﾒﾆｭｰで、ﾛｸﾞｲﾝ名を削除してﾒﾆｭｰを抜ける場合、変更確認ﾒｯｾｰｼﾞが表示されない不具合修正。	OT R&D
15	[Problem Solution] In Repeat Requisition menu, if LIH test is done together with an another test, the original test data is not displayed. [不具合対応] 再検受付ﾒﾆｭｰにおいて、LIHの抱き合わせ項目の元検体ﾃﾞｰﾀが表示されない不具合修正。	OT R&D R0629
16	[Problem Solution] Function key is shown in English at Password registration menu(applies to Japanese version only). [不具合対応] 【日本語版のみ】ﾊﾟｽﾜｰﾄﾞ設定ﾒﾆｭｰにおいて、ﾌｧﾝｸｼｮﾝｷｰの表示が英語で表示される不具合修正。	* OT R&D
17	[Problem Solution] Focus movement(selected part is moved by tab key or enter key) of Print-out style selection dialog at Periodical Maintenance is not properly done. [不具合対応] 定期ﾒﾝﾃﾅﾝｽの印刷形式選択ﾀﾞｲｱﾛｸﾞのﾌｫｰｶｽ移動が正しくない不具合修正。	OT R&D
18	[Problem Solution] System End Process is possible at Correlation Correction menu. [不具合対応] 相関図メニュー表示中にEndキーが有効となっている不具合修正。	OT R&D
19	[Problem Solution] If operator is missing such as “aA” in the calculation form, it does not give error when exiting the menu. [不具合対応] 項目間演算式のパラメータチェックにおいて、演算子を省略した式(例えばaAなど)がエラーとならない不具合修正。	OT R&D
20	[Problem Solution] Even login function is activated, menus that is level 10 can be accessed without login name. [不具合対応] ログイン有りにも関わらず、アクセスレベル１０のメニューをログイン名なしで扱える不具合修正。	OT R&D

NOTE	ISSUED BY
	S. Iguchi
	Aug. 23. 01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV2552	3. 0			
M521 Program for ODC	MV2553	3. 0			
M521 Program for Asia	MV2554	3. 0			

No.	CONTENTS	REMARKS
21	[Specification change] Cuvette number used for measurement is displayed and printed at “Rotation” and “Rotation Sequence” in Photometer Check DIAG. [仕様変更] ANLダイアグ回転測光の測定値表示ダイアログにおいて、測定Cuv.No. を表示／印字する。	OT R&D
22	[Problem Solution] If Measurement is stopped by STOP key when only ISE is analyzed and data is just coming out, maximum analyzed sample number that is used for next start sample number, is not properly recognized. [不具合対応] ISE項目のみの分析後のデータ出力中に強制停止した場合、分析済み最大S-Noが正しく更新されない不具合修正。	OT R&D
23	[Problem Solution] Text format does not have data number(first/second) at RB data host on-line output. [不具合対応] HostオンラインのRBﾃﾞｰﾀ送信において、電文上にデータ番号(1回目／２回目)が付加されない不具合修正。	OT R&D
24	[Problem Solution] When time-out parameter is defined as 99 for all and online error is occurred, program may stay in realtime requisition mode even after Standby, which does not allow several functions such as Measure Start, editing parameter, End Processing and so on. [不具合対応] タイムアウト時間をすべて最長(99)とした場合で、オンラインエラーが発生するとリアルタイム入力中の状態から抜けられなくなることがある不具合修正。	OAI CC132-117 OT CCQ34-007
25	[Problem Solution] When representative value is not possible to calculate among multiple RB/Acal analysis, Item number, data and flag is suppressed from Host output text. [不具合対応] Acal, RBで代表値が算出できない場合、Hostオンラインのデータ送信にて、項目番号、および付加情報が送信されない不具合修正。	OT R&D
26	[Problem Solution] “/” flag is printed for LIH at report format sequence output. [不具合対応] 報告書印刷の前詰めにて、LIH項目のエラーマークに”／”が印刷される。	OAI CC132-111
27	[Problem Solution] Long name for LIH is printed as “LIPEMIA”, ”ICTERUS” and “HEMOLYSIS” for report printout. [仕様変更] 報告書印刷にて、LIHのLong Nameを“乳ビ”, “黄疸”,”溶血”と印字する。	CC833-001

NOTE	ISSUED BY
	S. Iguchi
	Aug. 23. 01

SOFTWARE HISTORY TABLE B	SOFT. TYPE	M521 Standard Software for OAI/ODC/Asia	TYPE NO.	MP0174Q7 MP0175Q7 MP0176Q7	PAGE／NEXT	7	8

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
28	[Problem Solution] Report printing speed is too slow due to many line-feed. The number of line-feed will be decreased so that speed will be improved. [不具合対応] 報告書の印刷が極端に遅い不具合を改善した。	OT R&D
29	[Problem Solution] When more than 1000 sample data is not printed out due to printer trouble, printer error is generated but print cancel is not possible at printer control dialog. [不具合対応] 1000件以上、印刷待ちの検体データが存在する場合、プリンタエラー後、プリントキャンセルダイアログにてプリントキャンセル出来なくなる不具合修正。	OT R&D
30	[Problem Solution] Lamp power-on time is not calculated at End Process, resulting in the time is not accurate. (About 15 minutes deviation every power off) [不具合対応] ランプの通電時間計算がエンド処理時行われず正確でなかった不具合修正。(一回の終了毎に１５分程度の誤差が生じる)	OT R&D
31	[Problem Solution] Entering “Alt” + “-“ causes hang-up at all menu. [不具合対応] 全メニューにおいて、”Alt”+”-”を入力するとハングアップする不具合修正。	OT R&D
32	[Problem Solution] When only one control of multi QC is measured, the result may be not available. [不具合対応] ISEのQCﾏﾙﾁｺﾝﾄﾛｰﾙ片方のみの分析で、未分析となる場合がある不具合修正。	OT CCF32-125
33	[Problem Solution] “Usage of Different lot No. Reagent” is activated at System Maintenance, and even “Use Serum cal” is activated and Serum STAT table cal is AUTO mode, Alarm No.2091 to 2094 is generated. R1(2) lot No. different from RB(Acal) [不具合対応] ﾛｯﾄNo,ﾁｪｯｸ有りの場合において、血清ｷｬﾙ使用、かつ、血清が自動の場合にAlarm No.2091～2094が出力される不具合修正。	OAI CC133-001
34	[Problem Solution] Typing “+”, ”-” or ”=” can change the check box set-up even it is not edit mode. This can happens at menus that have check box. [不具合対応] “+”, ”-”, ”=”入力で、参照時でもﾁｪｯｸﾎﾞｯｸｽの設定変更が可能である不具合修正。	OT R&D

NOTE	ISSUED BY
	S.Iguchi
	Aug. 23. 01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
35	[Problem Solution] At reagent information printout, Calibration expiration is not properly printed. [不具合対応] 試薬状態の帳票印刷において、ｷｬﾘﾌﾞﾚｰｼｮﾝ有効期限切れが正しく印字されない不具合修正。	OAI CC132-064 CC132-138 CC133-043
36	[Specification Change] At STAT Cal requisition menu, “RB only”, “One point” and “All point” selection bottom is added. [仕様変更] キャリブレーション受付と同様な方法で、” 試薬ブランクのみ”、”一点補正”、”全点補正”が変更できるように変更。	ODC CC232-085
37	[Problem Solution] If index is changed when 90 indexes are existing already and open QC Data Edit menu, program error “No Index XX” happens. Same cause as above: If index is changed more than 6 times when 90 indexes are existing already and open QC Data Edit menu without END process, result may not output. [不具合対応] 90を超えてｲﾝﾃﾞｯｸｽを切り替え、ＱＣデータ編集メニューを開くと、プログラムエラー”No Index NN”を発生する不具合修正。 上記と同一原因： 90ｲﾝﾃﾞｯｸｽを超えて、立ち上げたまま7ｲﾝﾃﾞｯｸｽ以上切り替え、ＱＣデータ編集メニューを複数回開くと、分析データが出力されない不具合修正。	OT CCL33-009 CCQ34-007
38	[Problem Solution] If perform test total more than different 10 indexes in Reagent Consumption menu, program error “No Index XX” happens. Same cause as above: If open Reagent Consumption menu and perform test total more than 10 times without END process, program error “No Index XX” may happen. [不具合対応] ＥＮＤ処理なしに、試薬データ管理メニューを開き、総分析数実施することを11回以上行なったならば、プログラムエラー”No Index NN”を発生する場合がある不具合修正。	OT R&D
39	If Retry is set in Online Parameter menu、the time out is not proper when performing retry. オンライン条件設定においてリトライ回数が1回以上に設定されている場合、リトライ時のタイムアウトが正しくない不具合修正。	OT R&D

NOTE	ISSUED BY
	S.Iguchi
	Aug. 23. 01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV2552	3. 0			
M521 Program for ODC	MV2553	3. 0			
M521 Program for Asia	MV2554	3. 0			

No.	CONTENTS	REMARKS
40	[Specification Change] for OLA4000 (: LA for ODC) Do not use these parameters in lab, which does not use OLA4000. Specification change for LA connection. When “Automatic Line feeder” is activated at System Maintenance program the followings is available. In addition to current online specification: - Real-time requisition of RB/Acal(option1) - Real-time requisition of QC(option2) By using a new comport - Mode information(option3) - Reagent information(option4) - Alarm output(option5) Loading type - LBF loading(option6:uncheck)/Arm loading(option6:check) System maintenance program is changed.	* ODC
	[仕様変更] ＯＬＡ４０００（：ＯＤＣ向けのＬＡ）対応 ＯＬＡ４０００を使用しない施設ではこれらのパラメータを使用しないでください。 ＬＡ接続にともなう仕様変更 システムメンテナンスでＬＡ接続有りにした場合、以下が可能になる。 従来のオンライン仕様に加えて： ・ＲＢ・Ａｃａｌのリアルタイム項目受付が可能 ・ＱＣのリアルタイム項目受付が可能 新規オンラインポートを使用して： ・装置状態を出力可能 ・試薬情報を出力可能 ・警報を出力可能 ローディング方法 ・ＬＢＦより／アームより システムメンテナンスプログラムを変更	

NOTE	ISSUED BY
* :ODC Ver2.1S(INPECO特注)では対応済み Already fixed in ODC Ver2.1S (INPECO Special Ver)	S.Iguchi Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
41	[Problem Solution] If a rack is supplied from external LA when the system is about to finish Measure mode, ANL PRGERR4 is generated. [不具合対応] 分析終了直前にＬＡラック搬入が発生した場合、ＡＮＬＰＲＧＥＲＲ４が発生する不具合修正	OT 金沢大HP
42	[Problem Solution] CD unit may create an error when LA option is activated. [不具合対応] ＬＡ付きの場合、分析中にＣＤがエラーになる不具合修正	OT 金沢大HP
43	[Problem Solution] When the error is detected at Photometer initialization, it is retried. [不具合対応] イニシャライズ時の測光ＳｕｂＣＰＵ動作異常対策としてエラー時リトライを行なう。	OT 金沢大HP
44	[Problem Solution] When a rack is supplied right before Measure End, CA rack feed may not takes place. [不具合対応] 自動再検時、分析終了直前にラックを供給すると、以後ＣＡが停止する事がある不具合修正	OT CCF33-058
45	[Problem Solution] Probe crash detection is detected prior to upper sensor check so that true cause of the error is found easily. [不具合対応] 衝突検知警報の優先度変更	ODC CC233001
46	[Problem Solution] ANL PRGERR3 may be generated according to Contamination Parameter set-up. [不具合対応] コンタミパラメータの設定によって、ＡＮＬＰＲＧＥＲＲ３が発生する不具合修正	ODC CC233071
47	[Specification Change] for ＯＬＡ４０００（：ＬＡ for ＯＤＣ） Rack loading from Inpeco bench is possible. [仕様変更] ＯＬＡ４０００（：ＯＤＣ向けのＬＡ）対応 ＬＡからのラックロードで、ロボットアームからのロードを可能にした。	* ODC
48	[Problem Solution] When stop position error is occurred at reagent refrigerator, detail information in the alarm was not correct. [不具合対応] 試薬保冷庫の停止位置異常時、警報詳細Ｎｏ．が正しくない不具合修正	OT

NOTE	ISSUED BY
* :ODC Ver2.1S(INPECO特注)では対応済み　Already fixed in ODC Ver2.1S (INPECO Special Ver)	S.Iguchi Aug.23.01

SOFTWARE HISTORY TABLE B	SOFT. TYPE	M521 Standard Software for OAI/ODC/Asia	TYPE NO.	ＭＰ０１７４Ｑ７ ＭＰ０１７５Ｑ７ ＭＰ０１７６Ｑ７	PAGE／NEXT	１１	１２

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
49	[Problem Solution] ISE Buffer Pump Error seldom happen at ISE equipment Mechanical Initialization [不具合対応] リセット時、ＩＳＥバッファポンプが異常になる場合がある不具合修正	OT 金沢大HP
50	[Problem Solution] In order to guard form Electric Noise, Check Timing for ISE Sync Error is changed. [不具合対応] ノイズによるＩＳＥ同期信号異常耐性強化の為、同期信号チェックタイミングを変更	OT 金沢大HP CC833-034
51	[Problem Solution] After Slope Data take Zero, Normal ISE Data is coming up instead of abnormal Sample. [不具合対応] ＩＳＥがスロープ０の場合、異常な検体でも正常なＩＳＥデータが出力される不具合修正	ODC CC233004
52	[Specification Change] ISE Slope (Serum and Urine) ranges have been expanded as follows. Na 38 - 68 K 38 ～ 68 CL –38 ～ -68 [仕様変更] ＩＳＥスロープレンジを下記の通り変更。 Na 38 - 68 K 38 ～ 68 CL –38 ～ -68	OT
53	[Problem Solution] Fixed the following bug. In opening Start Condition menu, the mode changes from M1 to M2 or M3 and you press “SET” key. (In this time, Start S.No. are same as that in opening Start Condition menu.) After this, you exit Start Condition menu and restart measure. The measure is performed from Start S.No. in opening Start Condition menu. [不具合対応] 以下の不具合修正。 M1中にスタート条件を参照状態で開いたままM2,M3に移行し、設定状態にする。 （この時、開始S.No.は、スタート条件を開いた時のまま。） この後、参照状態に戻し、再スタートをかける。 すると、その分析はスタート条件を開いた時のS.No.から行われてしまう。	OT

NOTE

ISSUED BY

S.Iguchi

Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
54	[Specification Change] The formula of the reagent volume is changed in order to improve the Reagent Remainder. [仕様変更] 試薬液残り量低減の為、試薬残量式を変更する。	ODI IPM Mar.14.01
55	[Specification Change] Reagent Barcode kind of Code128 is available. [仕様変更] 試薬バーコードでＣｏｄｅ１２８を読み取り可能とする。	ODI IPM Mar.14.01
56	[Specification Change] 1% Conc Detergent is available. (This function become effective using System-Maintenance Menu.) [仕様変更] システムメンテナンスメニューで洗剤希釈濃度１％を設定可能とする。	OAI IPM Mar.14.01
57	[Specification Change] “Auto QC” function is available without next Sample. [仕様変更] 自動ＱＣは引き続き検体が無い場合でも実施する様変更。	OAI IPM May.12.99
58	[Problem Solution] Ever since Reagent Contamination Solution Surface Error happen, Dummy Sample is generated [不具合対応] コンタミ洗剤液面エラー発生後、ダミー分注を続ける不具合修正	OT R&D
59	[Problem Solution] In case that another same item are not measured till R2 Dispensing. Reagent Bottle cannot transport, even if R2 Reagent Surface Error happen on the Item. [不具合対応] Ｒ２分注する迄他に同じ項目を分析しなかった場合、その項目がＲ２液面エラーになっても試薬渡りを行わない不具合修正	OT 大阪府立 H.P

NOTE	ISSUED BY
	S.Iguchi
	Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV2552	3．0			
M521 Program for ODC	MV2553	3．0			
M521 Program for Asia	MV2554	3．0			

No.	CONTENTS	REMARKS
60	[Problem Solution] If Reagent Remain Volume is less than the volume needed for ACAL, STAT RB/ACAL are measured automatically every time at the beginning of Measure-1 when starting measure in STAND BY. The volume of the reagent bottle which have been used before reagent switch will become 0 after measure end as a countermeasure for this. [不具合対応] 試薬残量がＡＣＡＬ必要量以下の場合、STAND BYからの分析開始毎に自動ＲＢ／ＡＣＡＬを実施してしまう場合がある不具合修正。 対策として、自動ＲＢ／ＡＣＡＬの渡り済みの試薬残量が分析終了後に０となる。	OT 辰野H.P
61	[Problem Solution] If STAT Stop Pos. Sensor is out position, Sample Probe dose's work correctly in Sample Probe Diag. [不具合対応] サンプルプローブＤＩＡＧでＳＴＡＴ停止位置センサーがＯＦＦの場合、正しく動作しない不具合修正。	OT R&D
62	[Specification Change] The errors regarding to about photocal in Start Window: The error “Cuvette check not performed” is added. And an option switch is added to System Maintenance. This is an option to change ″fatal-error″ and ″not fatal error″ for “Error Cuvette” and “Cuvette check not performed.” And fixed the following bug. If photocal ends and the customer perform cuvette check when the Cuvette Status menu is opened, new photocal data is overwritten with last photocal data. [仕様変更] スタート画面でのフォトキャルに関するエラー： 「キュベットチェック未」を追加。 また、システムメンテナンスに以下の切替えを追加。 「異常キュベットあり」及び「キュベットチェック未」を致命的エラーするか、 非致命的エラーとするかを切り替える。 同時に「キュベット状態」を開いた状態でフォトキャルが終了し、「キュベット状態」を抜けずにキュベットチェックを実施すると前回のフォトキャルのデータで新しいフォトキャルデータが上書きされてしまう不具合修正。	ODC OT CCL33-045

NOTE	ISSUED BY
	S.Iguchi
	Aug.23.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for OAI	MV２５５２	３．０			
M521 Program for ODC	MV２５５３	３．０			
M521 Program for Asia	MV２５５４	３．０			

No.	CONTENTS	REMARKS
63	[Problem Solution] The index can be changed by entering the numerical key even in measure mode. [不具合対応] 分析中でもインデックスを数字入力により切り替えることができる。	OT CCF33-693
64	[Problem Solution] If the length of the patient information is shorter than 1 line, the same comment is printed in two lines in report print. [不具合対応] 報告書印刷において、患者コメントが１行分しかない場合、患者コメントに同じものを２度（２行）印字する。	OT CCN33-050 CCL34-019
65	[Problem Solution] MV1040(ISE Control Board) may be broken by over current, if the board stay in the mode of ISE Program Down Load long time. [不具合対応] ＩＳＥプログラムダウンロード時、ダウンロードモードで放置すると、過電流により基板が破損する場合がある不具修正	OT
66	[Problem Solution] R1 Reagent Barcode Read failure seldom happen in reagent check function. [不具合対応] 試薬チェック時、Ｒ１バーコード読み取りエラーになる事がある不具合修正	OT

NOTE	ISSUED BY
	H.Yamamoto
	Nov.19.01

MEDIA TYPE		Ver./Rev.	MEDIA TYPE		Ver./Rev.
M521 Program for Japan	MV２５５１	３．１			
M521 Program for OAI	MV２５５２	３．１			
M521 Program for ODC	MV２５５３	３．１			
M521 Program for Asia	MV２５５４	３．１			

No.	CONTENTS	REMARKS
1	[Problem Solution] When M1 re-starts at the end of M3, alarm 4030(DPR<->ANL Com. TimeOut(10)) appears and ANL mode shifts to STOP. After above, when Next-New M1/W1/W2/PhotoCal is ordered, Ion Deionised Water & Detergent Solution continuously (about 1 minute) spout from Cuvetts Washing Nozzle. [不具合対策] 分析後洗浄開始直前にM１再開すると、DPR<->ANL通信ﾀｲﾑｱｳﾄ(10)が発生し、その後分析/W1 W2/PhotoCalを再開すると、Cuv洗浄ﾉｽﾞﾙから水が出続ける。	*1 OT CC034-288
2	[Problem Solution] When a reagent bottle that has in tolerance of upper limit capacity as against the specification are used, Alarm 3216 or 3217 Reagent Empty Error(Surface Error) possibly happens in serial bottle of 30/60mL. Because new reagent formula on Ver3.0 is too severe. [不具合対策] Ver3.0で残量式を厳しく設定しすぎた為、規格ぎりぎりの大きさのﾎﾞﾄﾙを使用すると、30/60 mLﾎﾞﾄﾙにおいて、試薬渡り時に警報 3216/3217 試薬無し(液面ｴﾗｰ)が発生する可能性がある。	OT
3	[Problem Solution] MV1040(ISE Control Board) may be broken by over current, if the board stay in the mode of ISE Program Down Load long time. [不具合対応] ＩＳＥプログラムダウンロード時、ダウンロードモードで放置すると、過電流により基板が破損する場合がある不具修正	OT *2
4	[Problem Solution] R1 Reagent Barcode Read failure seldom happen in reagent check function. [不具合対応] 試薬チェック時、Ｒ１バーコード読み取りエラーになる事がある不具合修正	OT *2

NOTE	ISSUED BY
*1This phenomenon happen on the Ver3.0 with ISE　　Ver3.0でISE付きの場合に発生 *2 Already fixed in OAI/ODC/Asia Ver3.0　　OAI/ODC/Asia Ver3.0では対応済み	H.Yamamoto Mar.25.02

SOFTWARE HISTORY TABLE B	SOFT. TYPE	M521 Standard Software for Japan/OAI/ODC/Asia	TYPE NO.	MP０１７３Q７ MP０１７４Q７ MP０１７５Q７ MP０１７６Q７	PAGE／NEXT	1	—

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
1	<Additional Specification> Advanced Calibration function. This function is selectable according to the parameter set at System Maintenance Menu. In OAI / ODC, this system should be used in the condition that the above parameter is ON. In OT / Asia､etc, this system should be used in the condition that the above parameter is OFF. In the condition that the above parameter is OFF, the following functions of this additional specifications are as the following explanation. ･Individual Requisition in the requisition menus for Calibration / QC. Individual Requisition button is invisible and disable. ･Advanced Calibration in Calibration Specific menu This is invisible and disable. ･Registration of Reagent History (Related Item No.3) Reagent History is not registered and it is not displayed. ･Select Cal failed or Cal expired tests (Related Item No.5) By Reagent Check and STAT Check, Cal failed or Cal expired tests is not selected. (By pushing the button, Cal failed or Cal expired tests can be selected.)	UG IPM 1 **※1**
	<仕様追加> アドバンスドキャリブレーション機能追加。 システムメンテナンスにて、切り替え有り。 OAI/ODCは、該当切替えをON、OJ、一般地域はOFFにて使用する。 該当切替えがOFF状態では、本追加仕様の中で以下の機能が、下記の説明のようになる。 ・キャリブレーション／ＱＣの受付における個別選択。 個別選択ボタンを隠し、個別選択がされないようにする。 ・項目別キャリブレーション条件のアドバンスドキャリブレーションの設定。 該当設定を隠す。 ・試薬履歴の登録。(関連項目No.3) 試薬履歴の登録をしない、かつ、履歴表示を隠す。 ・キャリブレーションが失敗している項目、及び、キャリブレーションが有効期限切れの項目を選択する機能。(関連項目No.5) 試薬チェック／ＳＴＡＴチェックにより、自動的に選択する機能の無効化。 （ボタン押下による選択機能は、有効。）	+ AU2700JIM OAI 1, 2, 4, 7, 9, 17 AU2700JIM ODC 2 **※1**

NOTE

※1: Already adapted on M526 Ver4.0(Up Grade)
M526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)では対応済み

ISSUED BY
S.Iguchi
Apr.18.02

SOFTWARE HISTORY TABLE B	SOFT. TYPE	M521/526 Standard Software for Japan/OAI/ODC/Asia	TYPE NO.	MP0287Q7 MP0288Q7 MP0289Q7 MP0290Q7	PAGE／NEXT	1	2

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
2	<Additional Specification> Automatic execution function when automatic power-on. <仕様追加> 自動立ち上げ時の自動実行機能追加。	UG IPM 2 + AU2700JIM OAI 11 ※1
3	<Additional Specification> When advanced calibration function is activated: On-board stability information of reagent bottles are kept memorized at test items which are Multi-Reagent Switch or one-shot. <仕様追加> Adv Cal機能有効時、 同時渡りの項目、及び、1試薬系の項目において、試薬ボトルのオンボードスタビリティを記憶する機能追加。	UG IPM 3 ※1
4	<Additional Specification> On-line output of reagent lot number and bottle number information together with data. <仕様追加> オンラインにおいて、データと共に試薬のロットNo.とボトルＮｏ．の情報を送信できる機能追加。	UG IPM 9 ※1
5	<Additional Specification> Possibility to select Cal failed or Cal expired tests. <仕様追加> キャリブレーションが失敗している項目、及び、キャリブレーションが有効期限切れの項目を選択できる機能追加。	UG IPM 11 ※1
6	<Additional Specification> Data scroll function at Test Data Display. (The number of lines, which can be displayed in Measured Display, is max.1000.) <仕様追加> データ表示にて、画面をスクロールしてデータを参照できる機能追加。 (分析済みデータ表示は最大１０００行分の表示が可能。)	UG IPM 17 ※1
7	<Additional Specification> Reagent amount, that can be actually used, is displayed. <仕様追加> 使用できる試薬量（搭載試薬量）を表示する機能追加。	UG IPM 19 ※1
8	<Additional Specification> The function that displays the amount of expected reagent consumption. <仕様追加> 使用する試薬の予定量を表示する機能追加。	UG IPM 20 + AU2700JIM OAI 15,16 ※1

NOTE

※1: Already adapted on M526 Ver4.0(Up Grade)
M526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)では対応済み

ISSUED BY
S.Iguchi
Apr.18.02

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
9	< Additional Specification > Masking function : disabling selected test items. --- <仕様追加> マスキング機能追加：特定の項目が分析されない様にすることができる機能追加。	UG IPM 21 **※1**
10	<Specification Change> In the [(P)Parameter][(B)Calibration] menus, number of maximum calibrator is changed from 80 to 200. And the information of control / calibrator can be referred to at Start Condition Menu Requisition Menu. --- <仕様変更> ｷｬﾘﾌﾞﾚｰﾀ : 同時に使用できるｷｬﾘﾌﾞﾚｰﾀの上限を、80 から 200 に拡張した。 これに伴ない、スタート条件メニュー、及び、受付メニューにてコントロール／キャリブレータに関する情報(キャリブレータ名等)を参照可能とする。	UG IPM OAI 0 **※1**
11	<Additional Specification> Additional print-out format pattern of real-time data log list. --- <仕様追加> リアルタイムデータログリストの印刷パターン追加。	UG IPM OAI 2, 4, 6 =OAI Request#4 Data Log List A, C, E **※1**
12	<Additional Specification> Addition of option to print patient demographics information to real-time Data Log List. --- <仕様追加> 患者情報をリアルタイムデータログリストに印刷する機能追加。	UG IPM OAI 3 = OAI Request#4 Data Log List B **※1**
13	<Additional Specification> At real-time data log list, a comment is printed to identify RB or Acal is passed or failed when those are failed. --- <仕様追加> リアルタイムデータログリスト上で、RB, ACALの成功／失敗が判別できるように、失敗時にコメントを出力する機能追加。	UG IPM OAI 5 = OAI Request#4 Data Log List D **※1**

NOTE	ISSUED BY
※1: Already adapted on M526 Ver4.0(Up Grade) M526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)では対応済み	S.Iguchi Apr.18.02

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AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
14	<Additional Specification> At real-time data log list, and when the patient is requisitioned with no test to be run, a comment is printed to identify it is run. <仕様追加> リアルタイムデータログリスト上で、項目選択なしで登録された検体がながされた場合に、検体がセットされなかった場合と区別できるように、コメントを出力する機能追加。	UG IPM OAI 7 = OAI Request#4 Data Log List F **※1**
15	<Additional Specification> An option to print RB/Acal/QC data on real-time Report Format. <仕様追加> リアルタイム報告書上に、RB/ACAL/QCのデータを印刷することができる機能追加。	UG IPM OAI 8 = OAI Request#4 Data Log List G ODC44 **※1**
16	<Additional Specification> Test data print-order can be programmable with Sequence mode at Report Format. <仕様追加> 報告書の前詰め形式の出力において、項目の印刷順を変更可能とする機能追加。	UG IPM OAI 9 = OAI Request#4 Data Log List H ODC54 **※1**

NOTE

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SOFTWARE HISTORY TABLE B	SOFT. TYPE	M521/526 Standard Software for Japan/OAI/ODC/Asia	TYPE NO.	MP0287Q7 MP0288Q7 MP0289Q7 MP0290Q7	PAGE / NEXT	4	5

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
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AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
17	<Specification Change> Only for overseas Change of unit message from "days", "weeks", "months" to "day(s)", "week(s)", "month(s)". <仕様変更> 海外版のみ 定期メンテナンスの単位の表記を"days", "weeks", "months" から "day(s)", "week(s)", "month(s)"に変更。	UG IPM OAI 20 = OAI Request #14 (PSR) ※1
18	<Specification Change> Reagent short alarm is not bottle oriented but test oriented. <仕様変更> 項目毎にアラームショットを変更可能とする。	UG IPM ODC 3 ※1
19	<Additional Specification> Rack No. and position are displayed in data edit menu. <仕様追加> データ編集メニューでラックNo.とカップ位置を表示する機能追加。	UG IPM ODC 18 ※1
20	<Specification Change> Displays with different color when it is expired and failed in Calibration Curve Menu and in Calibration Trace Menu. <仕様追加> 検量線表示メニュー、及び、キャリブレーショントレースメニューにおいて、失敗とキャリブレーションの有効期限切れを異なる色で表示する様に変更。	UG IPM ODC 23 ※1
21	<Additional Specification> Addition of an alarm, which is generated when Host downloads with no test. This does not apply for SE text download. <仕様追加> 項目選択なしでHOSTが検体の応答を行なった場合(検体情報あり、かつ、項目選択情報なしの状態)に出力する警報追加。	ODC29 ※1
22	<Additional Specification> W2 + Photocal can be performed. At the W2 start dialog, selecting W2 with or without Photocal is available. <仕様追加> W2/Photocal : W2 開始時に、Photocalを継続して実行するかどうか、選択できるように変更する。	ODC39 + AU2700JIM OAI 19 ※1
23	<Specification Change> Automatic QC after Acal can be performed independent with count number. <仕様変更> Cal後の自動QCにおいて、カウント数の入力を必要としない様に変更。	AU2700JIM OAI 8 ※1

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AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
24	<Specification Change> In the analysis start dialog, the reagent bottle failure message "Incorrect Reagent set nn.xxxxx aaa..aa bb cc" is changed to "Incorrect Reagent(s) set R1/R2 Group". <仕様変更> 分析ｽﾀｰﾄ : 分析開始時に、試薬ﾎﾞﾄﾙに異常が認められた場合のﾒｯｾｰｼﾞを変更する。	AU2700JIM OAI 10 ※1
25	<Specification Change> The mark "b" is attached to OD results when there is no factor. <仕様変更> ファクタが存在しない時に出力されるＯＤデータにエラーマーク "b" を付加する様変更。	AU2700JIM OAI 14 ※1
26	<Specification Change> Only for overseas Displayed message change at Reagent Information menu. Expired -> Exp. Date <仕様変更> 海外版のみ 試薬状態位置別表示画面上のメッセージ変更。 Expired -> Exp. Date	AU2700JIM OAI 17 ※1
27	<Specification Change> In the following menus, the digit on X axis in the graph chart is changed to display horizontally. [(R)Routine][(C)Calibration Monitor][(T)Calibration Trace] [(R)Routine][(C)Calibration Monitor][(B)Reagent Blank Monitor] [(R)Routine][(P)Photocal Monitor] [(R)Routine][(Q)QC Monitor][(D)Daily Control] [(R)Routine][(Q)QC Monitor][(S)Day To Day Control] [(A)Auxiliary][(H)Histogram] <仕様変更> ｷｬﾘﾌﾞﾚｰｼｮﾝﾄﾚｰｽ/試薬ﾌﾞﾗﾝｸﾓﾆﾀ/ﾌｫﾄｷｬﾙﾓﾆﾀ/日内変動/日差変動/ﾋｽﾄｸﾞﾗﾑ : ｸﾞﾗﾌの目盛について表記形式を変更する。	AU2700JIM OAI 21 ※1
28	<Additional Specification> Reagent check function to read barcode at designated position and check remaining reagent. <仕様追加> 指定位置でﾊﾞｰｺｰﾄﾞを読み取り、残量ﾁｪｯｸを行なう機能追加。	AU2700JIM ODC 1 ※1
29	<Additional Specification> Reagent Check (All Pos.) is able to skip bar code reading (check of pos. and bar code). <仕様追加> 全位置の試薬残量ﾁｪｯｸにてﾊﾞｰｺｰﾄﾞの読み込みをスキップし、液量だけをチェックできる機能追加。	AU2700JIM ODC 19 ※1

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AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
30	<Specification Change> When an operation prohibition message is displayed in the operation start dialog, its cause is also indicated. <仕様変更> ｵﾍﾟﾚｰｼｮﾝ禁止ﾒｯｾｰｼﾞについて、原因にあたる内容をﾒｯｾｰｼﾞに表示するように変更する。	AU2700JIM ODC 25 ※1
31	<Specification Change> Sample kind print-out can be eliminated from data log list. This is selectable at System Maintenance menu. <仕様変更> システムメンテンスにてデータログリストにサンプル種別を印字しないことを可能とする。	AU2700JIM PSR OAI 16 ※1
32	<Specification Change> R3,R4 reagent is possible(They are treated as R2 reagent) <仕様変更> R3,R4試薬ﾊﾞｰｺｰﾄﾞ対応（R3,R4のﾊﾞｰｺｰﾄﾞをR2として読み込むように仕様変更）。	OT R&D ※1
33	<Specification Change> It is possible to select 6 or 9 digit at Report Format data. <仕様変更> 報告書ﾃﾞｰﾀ桁数6桁/9桁を切替え可能とする。	UG IPM ODC 37 ※1
34	<Specification Change> A error when no contamination detergent in Reagent compartment is added at Measure start check. <仕様変更> 分析スタート時のチェックにコンタミ洗剤なしの時のエラーを追加。	OT R&D ※1
35	<Specification Change> Wavelength is displayed at the graph of Photocal Monitor. <仕様変更> フォトキャルモニタにおけるグラフ表示に波長の凡例追加。	OT R&D ※1
36	<Specification Change> Data that cuvette volume is less than 150μL is displayed as below. Graph: broken line, Data: gray. <仕様変更> リアクションモニタにて、検液量150μL未満のグラフ／データ表示変更 （グラフ：破線表示／データ表示：グレー）。	OT R&D ※1
37	<Specification Change> Some of alarms with sample number are changed to include sample ID. Then, it is easier for operators to search a sample cup with the help of the alarm. <仕様変更> 警報処理 : 警報の付帯情報に、検体IDを付加するように変更する。	OT R&D ※1

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AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
38	<Additional Specification> It is possible to run without detergent A. This function is selectable in System Maintenance Menu. <仕様追加> システムメンテナンスにて、A洗剤無し仕立てが設定可能	OT R&D ※1
39	<Additional Specification> New type of Electrode(ISE) is available. This function is selectable in System Maintenance Menu. If new ISE is selected, New ISE cleaning function is available in ISE Status Menu and W2 operation. <仕様追加> システムメンテナンスにて新電極の設定が可能 ＩＳＥ単体動作とＷ２動作で新電極用クリーニング動作が利用可能	OT R&D ※1
40	〈Problem Solution & Specification Change〉 1. The software problem that print out blank data of automatic QC is corrected. 2. Automatic QC of blank item is available not only sample-interval but also item-interval. Automatic QC is generated when both Color and Blank Item quantity of measuring exceed the interval that is set at Automatic QC parameter menu. 〈不具合対応及び仕様変更〉 １．検体ブランク項目の自動ＱＣで、ブランク側のデータが印字される不具合修正。 ２．検体間隔だけでなく項目間隔でもブランク項目の自動ＱＣを可能とする。 尚、検体ブランクの自動ＱＣは、発色とブランク両方が指定回数に達した後に実施する。	CC132-010 (OAI) ※1

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No.	CONTENTS	REMARKS
41	<Problem Solution> A bug that ISE slope check is done with absolute value is corrected. <不具合対応> ISEｽﾛｰﾌﾟﾚﾝｼﾞﾁｪｯｸ不良：絶対値で判定される不具合修正。	OT R&D ※1
42	<Problem Solution> Report format print speed is slow. It is improved. <不具合対応> 報告書の印刷が遅すぎる不具合修正。（報告書印字速度の改善。）	OT R&D ※1
43	<Problem Solution> ISE requisition is possible through on-line even sample kind is OTHERS, it is corrected. <不具合修正> オンラインでサンプル種別が「その他」のＩＳＥが受付できてしまう不具合修正。	OT R&D ※1
44	<Problem Solution> “r” flag may be attached with real-time Report Format. It is corrected. <不具合修正> 分析中、リアルタイム報告書にrマークが付加されない様に変更。	OAI CC133-142 ※1
45	<Problem Solution> A new alarm is added under the following case. At Rack No. analysis mode, the maximum S.No. is exceeded over 9999 when S.No. is calculated from Rack No. <不具合修正> ラックNo.分析にてﾗｯｸNo.よりS.No.を算出する場合、最大のS.No.を超えるケースにおいて警報追加。	OT R&D ※1
46	<Problem Solution> A bus, that is possible to edit S.No. at Analysis Start dialog even Rack No. Analysis mode, is corrected. <不具合修正> ﾗｯｸNo分析なのに、分析スタート時のダイアログにて開始S.No.の編集ができる不具合修正。	OT R&D ※1

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No.	CONTENTS	REMARKS
47	<Problem Solution> Real-time print-out can not be finished when print-out error is occurred and printing is paused over 1000 tests. It is corrected. 〈不具合修正〉 リアルタイム印字エラー中断時の1000ﾃｽﾄ超過時に印字終了できない不具合修正。	OT R&D ※1
48	<Problem Solution> When downloaded text is illegal, program Error is generated. It is corrected. (On-line Format error will be generated.) 〈不具合修正〉 ｵﾝﾗｲﾝにて受信電文長不正時にﾌﾟﾛｸﾞﾗﾑｴﾗｰが出力される不具合修正。 (ﾌｫｰﾏｯﾄｴﾗｰ警報を出力する様に修正。)	OT R&D ※1
49	<Problem Solution> When online timeout error happens, the details of a cause cannot be distinguished. It is corrected. (Information (timer number) is displayed at On-line Timeout error.) 〈不具合修正〉 ｵﾝﾗｲﾝﾀｲﾑｱｳﾄｴﾗｰ発生時に発生要因の詳細が分からない不具合修正。 (警報に種別情報(ﾀｲﾏｰNo.)が表示される。)	OT R&D ※1
50	<Problem Solution> When the new index is created with F8 key at Start Condition menu, S.No. display at DPR Status menu is not reset. It is corrected. 〈不具合修正〉 ｽﾀｰﾄ条件にてF8によるｲﾝﾃﾞｯｸｽ更新時、DPRｽﾃｰﾀｽﾒﾆｭｰのS.No.リセットされない。	OAI CC134-048 ※1
51	<Problem Solution> Re-calculation from OD is possible during measure mode at Data Correction Menu. It is corrected. 〈不具合修正〉 ﾃﾞｰﾀ補正ﾒﾆｭｰにて、分析中再計算ができてしまう不具合修正。	OT R&D ※1

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No.	CONTENTS	REMARKS
52	<Problem Solution> Sample number entry of less than Requisitioned S.No. + 1 is possible at M1 Start from M2 or M3, even Auto Repeat check box is checked at Repeat Common Menu. It is corrected. <不具合修正> 再検共通条件の再検自動判定が ON の場合でも、分析ﾓｰﾄﾞ M2,M3にて受付済み最大S.No+1 未満の入力が可能である不具合修正。	OT R&D ※1
53	<Problem Solution> A guidance message “Comment is set by *1 to *240” is added at Operator name entry of Start Condition menu. <不具合修正> ｽﾀｰﾄ条件ｵﾍﾟﾚｰﾀ名入力ｶﾞｲﾀﾞﾝｽに「*1 ～ *240 で登録文字列を設定。」を追加。	OT R&D ※1
54	<Problem Solution> At Repeat Run Requisition menu, after requisition is made, and all tests are eliminated and then the Sample(s) is(are) deleted. Under this condition, requisitioned number of sample display at Test Total shows the number before deleting samples. <不具合修正> 再検受付ﾒﾆｭｰにて受付後、選択した項目をすべて取り消した状態で、検体削除を実施してもテストトータルの受付済検体数の表示が削除した検体数分、減算されない。	OT R&D ※1
55	<Problem Solution> At Item Oriented data display of Repeat Data Verification Menu, double-click causes data overwrite with repeated result. It is corrected. <不具合修正> 再検データ書き換えメニューにて、項目別データ書き換え画面にて、ダブルクリックするとデータが書き換えられてしまう（再検結果を上書きしてしまう）不具合。	OT R&D ※1
56	<Problem Solution> At History display (graph) of Reagent Blank Monitor menu, the guidance of Item Name combination box shows list box guidance. It is corrected. <不具合修正> 試薬ﾌﾞﾗﾝｸﾓﾆﾀの履歴画面(ｸﾞﾗﾌ表示画面)にて項目名のｺﾝﾎﾞﾎﾞｯｸｽのｶﾞｲﾀﾞﾝｽが、ﾘｽﾄﾎﾞｯｸｽのｶﾞｲﾀﾞﾝｽを表示している。	OT R&D ※1
57	<Problem Solution> At Repeat Requisition menu, when repeat run candidate sample is searched, Searching message is not displayed even it takes a long search. <不具合修正> 再検受付メニューにて、再検候補一覧を表示する際、時間がかかっても検索中メッセージが表示されない不具合修正。	OT R&D ※1

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No.	CONTENTS	REMARKS
58	<Problem Solution> Only for Overseas. At Data List Menu and when format number is not designated and printing is started, wrong message is generated. It is corrected as below. Data List Undefined → Data List No. Undefined --- <不具合修正> 海外版のみ 検査台帳報告書メニューにおいて、印刷を指示した際に印刷用のフォーマットが設定されていない場合に表示される帳票なしメッセージが誤っている不具合修正。 Data List Undefined → Data List No. Undefined	OT R&D ※1
59	<Problem Solution> In the following menu, ":" is added on the each label. Test Requisition – Normal, Repeat, Retrieve Repeat Run Data, Reaction Monitor, Calibration Curve, Data Edit, Data Correction, Repeat Data Verification, Report, Data List, Online, Specific Test Parameters, Data Statistics, Correlation Chart, Histogram, FD Data Management, Off-line Output (example) Routine -> Routine: --- <不具合修正> 以下のメニューにおいて、各名称タイトルに「：」が抜けている不具合修正。 通常受付、再検受付、再検バッチ抽出、 リアクションモニタ、検量線表示、 データ編集、データ補正、再検データ書き換え、 報告書、検査台帳報告書、オンライン出力、 項目別分析条件、 統計計算、相関図、ヒストグラム、 ＦＤデータ管理、オフライン出力、 （例）一般→一般：	OT R&D ※1

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No.	CONTENTS	REMARKS
60	<Problem Solution> Only for Domestic. Japanese message is corrected. --- <不具合修正> 国内版のみ 報告書フォーマットメニューにて、「異常値記号」が「異常値信号」となっている不具合修正。	OT R&D ※1
61	<Problem Solution> Only for Domestic. Japanese message is corrected. --- <不具合修正> 国内版のみ 特殊条件メニューにて“試薬ﾌﾟﾛｰﾌﾞ洗浄液種”の表示が“試薬ﾌﾟﾛｰﾌﾞ”となっている不具合修正。(洗浄液種に変更。)	OT R&D ※1
62	<Problem Solution> Only for Domestic. Japanese message is corrected. --- <不具合修正> 国内版のみ データチェック条件にてﾃﾞｰﾀﾁｪｯｸ条件ﾒﾆｭｰのﾃﾞｰﾀﾁｪｯｸ2/3にある判定値1/2の入力ｶﾞｲﾀﾞﾝｽが(0.0000～2.0000)になっている不具合修正。 判定値1：(0.0000～99.999) 判定値2：(0.0000～2.5000) が正しい。	OT R&D ※1

NOTE		ISSUED BY
	※1: Already adapted on M526 Ver4.0(Up Grade) M526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)では対応済み	S.Iguchi Apr.18.02

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
63	<Problem Solution> The folder is not proper when saving files to HD in Parameter Management menu. (AU***¥Parameter¥BackUp → AU***¥Parameter¥save) --- <不具合修正> パラメータ管理メニューのセーブ先フォルダ不良。 (AU***¥Parameter¥BackUp →AU***¥Parameter¥save)	OT R&D ※1
64	<Problem Solution> When "Average LifeTime Display is yes at System Maintenance menu, the background color of Lamp in Consumable Management Menu, which should be displayed according to the period that Lamp has been being turned on, is not correct. --- <不具合修正> ｼｽﾃﾑﾒﾝﾃﾅﾝｽにてAverage LifeTime DisplayがON時、消耗品管理メニューで通電時間に応じて表示されるべきﾗﾝﾌﾟの背景色が誤っている。	OT R&D ※1
65	<Problem Solution> When drag and drop with mouse from list box in center of Grid Display in Periodic Maintenance Menu, DPR hung-up sometimes happens. It is corrected. --- <不具合修正> 定期ﾒﾝﾃﾅﾝｽｰｸﾞﾘｯﾄﾞ画面にて、中央のﾘｽﾄﾎﾞｯｸｽをﾏｳｽでﾄﾞﾗｯｸﾞ ｱﾝﾄﾞ ﾄﾞﾛｯﾌﾟするとﾊﾝｸﾞｱｯﾌﾟする場合がある不具合修正。	OT R&D ※1
66	<Problem Solution> If Reagent/STAT cover is opened or Rack Full Error is generating in LA (laboratory Automation) mode, the rack from LA-System cannot feed. Therefore we add Alarm No. 3276 "LBF RACK FEED DISABLE". --- <不具合対応> ＬＡ分析で、試薬／ＳＴＡＴ蓋開放又はラックＦＵＬＬによりＬＡラックが搬入できない場合の対応として警報３２７６"LBFからのラック搬入禁止中"を追加	OT R&D ※1
67	< Specification Change> 120mL bottle is possible to use. --- <仕様変更> 120mLボトル対応。	OT R&D ※1

NOTE	ISSUED BY
※1: Already adapted on M526 Ver4.0(Up Grade) M526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)では対応済み	S.Iguchi Apr.18.02

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
68	[Problem Solution] When M1 re-starts at the end of M3, alarm 4030(DPR<->ANL Com. TimeOut(10)) appears and ANL mode shifts to STOP. After above, when Next-New M1/W1/W2/PhotoCal is ordered, Ion Deionized Water & Detergent Solution continuously (about 1 minute) spout from Cuvettes Washing Nozzle. [不具合対策] 分析後洗浄開始直前にM1再開すると、DPR<->ANL通信ﾀｲﾑｱｳﾄ(10)が発生し、その後分析/W1 W2/PhotoCalを再開すると、Cuv洗浄ﾉｽﾞﾙから水が出続ける。	OT CC034-288 ※2 ※4
69	[Problem Solution] After STAT No Cup Alarm happen in measure mode, M1 start is canceled at the next new M1 starting. [不具合対策] 分析中STATｶｯﾌﾟ無しになった後、分析を開始するとM1ができない場合がある。	OT R&D CC034-017 ※4
70	[Problem Solution] When AU systems receives the text which has block No. “0” and does not receive the other blocks which should follow that, AU systems does not result in time out error but still are waiting receiving text. [不具合対策] ﾎｽﾄｵﾝﾗｲﾝにて、ﾃﾞｰﾀ区分No.”0”の電文を受信し、その後、継続するﾌﾞﾛｯｸが受信されない場合、ﾀｲﾑｱｳﾄとならず、応答待ちの状態のままになる不具合修正。	OT R&D ※4
71	[Problem Solution] If the “Data Display” is still opened in measure, program error “9492 DPRERR 556, MainFrm.cpp, Failed to request to throw” occasionally happens. [不具合対策] 分析中ﾃﾞｰﾀ表示が開かれたままだと、ﾌﾟﾛｸﾞﾗﾑｴﾗｰ「“9492 DPRERR 556, MainFrm.cpp, Failed to request to throw”」が時折発生する不具合修正。	OT R&D ※3 ※4
72	[Problem Solution] In some cases, even if Reagent barcode error happens, AU system does not generate alarms for reagent barcode error. [不具合対策] 試薬ﾊﾞｰｺｰﾄﾞﾘｰﾄﾞｴﾗｰとなっても、試薬ﾊﾞｰｺｰﾄﾞﾘｰﾄﾞｴﾗｰの警報が出力されない場合がある不具合修正。	OT R&D ※3 ※4

NOTE

※2： This phenomenon happen on M521 Ver3.0 or M526 Ver4.0(Up Grade)
本現象はM521 Ver3.0又はM526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)でのみ発生

※3： This phenomenon happen on M526 Ver4.0(Up Grade)
本現象はM526 Ver4.0(ｱｯﾌﾟｸﾞﾚｰﾄﾞ)でのみ発生

※4： This problem is already fixed on M526 Ver 4.1 for Japan
M526国内版Ver4.1では対応済み

ISSUED BY
S.Iguchi
Apr.18.02

MEDIA TYPE		Ver/Rev	MEDIA TYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	4.2			
AU640/640e System Program for OAI	MV3309	4.2			
AU640 System Program for ODC	MV3310	4.2			
AU640 System Program for Asia etc	MV3311	4.2			

No.	CONTENTS	REMARKS
73	[Specification Change] <for oversea> The number of types of 120mL Bottle is changed to one. [仕様変更] ＜海外版のみ＞ 120mLﾎﾞﾄﾙの画面上での表記を1種類に変更。	IPM Feb.8, 2002 **※4**
74	[Specification Change] In “Reagent Consumption” menu, the reagent consumption data can be output as a file “reagent consumption” by “File” key. And the above file can be saved to floppy disk in “File Management” menu. [仕様変更] 「試薬データ管理」メニューで、「ファイル」キーにより試薬消費量データを ファイル「Reagent Consumption」として出力できる様に変更。 同時に、上記ファイルをファイル管理メニューにてフロッピーディスクに保存できる様に変更。	OAI ICR 134-002 **※4**

NOTE

※4： This problem is already fixed on M526 Ver 4.1 for Japan
M526国内版Ver4.1では対応済み

ISSUED BY
S.Iguchi
Apr.18.02

Installation Procedures for the Ver.4.2 on the AU640

If you'll up date from V2.0/V2.1, Follow the step **In the case of update from V2.0/V2.1.**
If you'll up date from V4.0, Follow the step **In the case of update from V4.0.**
If you'll install AU640 for PC that is **not** currently using with AU640, Follow the step **In the case of new installation of AU640 program**.

----------**In the case of update from V2.0/V2.1**----------

Caution: If you'll up date , the following data are initialized.
This procedure may initialize "Reaction Data" in the cases, which "Start Condition" menu has more than 90 indexes except "Current Time".
Because the database for "Reaction Data" may be in illegal condition in these cases.
After this update, if index is changed when 90 indexes are existing already, reaction data that is stored in the past is not shown, you need to initialize reaction data in System Maintenance.

- Use System Maintenance Menu after this version to initialize reaction data.
- Not initialize reaction data for no reaction data.

And if there are data, which is in illegal condition, this procedure may delete them.

In this case, if the hard disk of the DPR does not have enough free space, you can not update and you need to prepare another hard disk which has enough free space.

[0] Confirm the number of indexes except "Current Time" in "Start Condition" menu.
[1] Boot up the AU640.
[2] Press "Q" key while "Wait a few seconds" message is displaying.
[3] Click the "END" button on window.
[4] Insert Program CD-ROM.
[5] Select Start – Run from NT, and D:\Utility\Cnv20_40\Cpycnv.bat (drive name may be different depends on HD partition) and press "OK".
Do not run Cpycnv.bat from Explore.

[6] A window is open on the screen, and the message as below is displayed.

```
' ****     START [Copy Ug_cnv]      ****
Press any key to continue. . .
```

[7] Then, Press any key and copying files for converter to hard disk are started disk on the window.

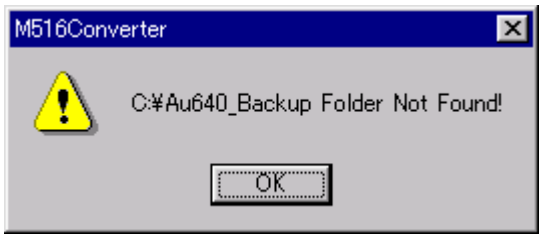
When finishing it, you can see the message as below.

```
' ****     END   [Copy Ug_cnv]      ****
Press any key to continue. . .
```

[8] Then, Press any key and close the window.

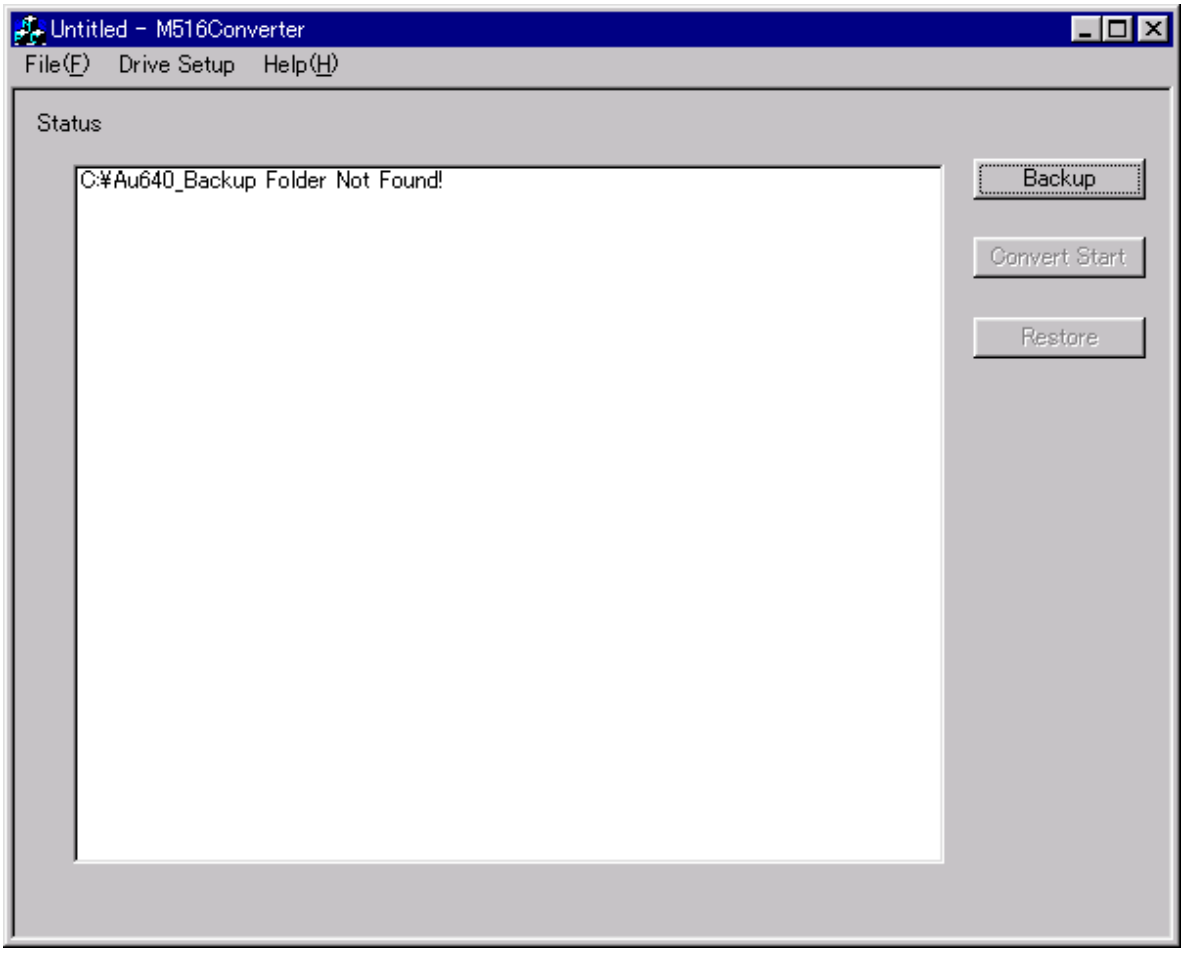
[9] Select Start – Run from NT, and C:\UG_CNV\M526Converter.exe and press “OK”.
Do not run M526Converter.exe from Explore.

[10] A following message is displayed.



Press “OK”.

[11] A below screen is displayed.



The status of function buttons (“Backup”, ”Converter Start”, “Restore”) of this Converter tool is displayed according to folders already existing on each drive by the time this tool is started up.
The drive, which files are saved to, is selectable by “Drive Setup” menu.
The drive, which files are restored from, is same as the above drive.
The status of these function buttons is not changed by change of the existing folder on each drive by things except this tool or change of a drive (, which a file is saved to), after this tool was started.

[12] Press “Backup”.

If the drive, which files are saved to, has enough free space, the backup process will be started.
If the drive, which files are saved to, does not have enough free space, the following message will appear.
In this time, please prepare another hard disk (drive), which has enough free space, and try to update again.

[13] After completing backup, you’ll press the button “×” on the Up-right corner of this tool.

[14] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press “OK”.
Do not run Setup.exe from Explore.

[15] Press “Next” twice.

[16] Select “Typical” and click “Next”. It will start loading, and follow the screens.

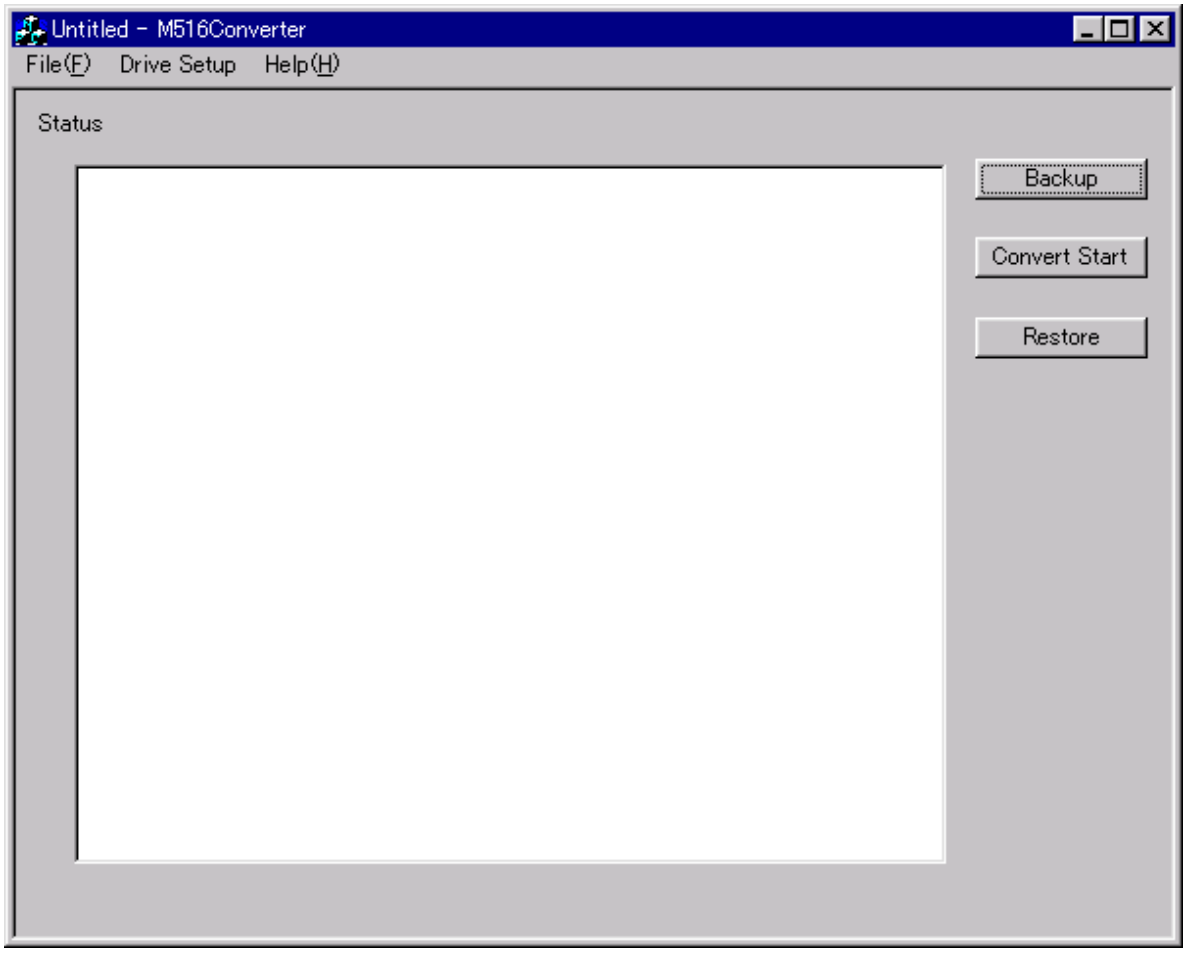
[17] After completion of Set-up, select “Yes, I want to restart my computer”.
And press “Finish”.

[18] Press “Q” key while “Wait a few seconds” message is displaying.

[19] Click the “END” button on window.

[20] Select Start – Run from NT, and C:\UG_CNV\M526Converter.exe
and press “OK”.
Do not run M526Converter.exe from Explore.

[21] A below screen is displayed.



[22] Press “Convert Start”.

[23] After completing conversion, you’ll press the button “×” on the Up-right corner of this tool.
If the installed software version is not correct, some errors will happen.
In this time, this tool can not convert files.
Please confirm error messages and do “Restore”.
In this case, Folder “AU640”, which already exists, is deleted.

[24] Click “Start” of Windows NT , select “Shut down” and press “Yes” .
Wait until PC says “It is now safe to turn off your computer”.

[25] Press “EM STOP”, ”Reset”, and “ON” of the ANL.

[26] Press “Q” key while “Wait a few seconds” message is displaying.

[27] Set up parameters according to your necessity.
<Caution>

・Some parameters of **"Maker Parameters - etc"** are added or changed.

Concentration of Acid Detergent	: Change options from 2%, 3% to 1%, 2% on Version 3.0
Concentration of Acid Detergent	: Change options from 2%, 3% to 1%, 2% on Version 3.0
NewTypeISE	: Added newly on Version 4.0
NotUseDetergentA	: Added newly on Version 4.0
CuvetteFatalFlag	: Added newly on Version 3.0
ReagentRestCountType	: Added newly on Version 3.0
ADV_CAL	: Added newly on Version 4.0

Please do not check(mark) the ReagentRest Count Type.

Please do not check(mark) the ADV_CAL.

・All parameters of **"Maker Parameters – OLA4000"** is added on Version 3.0.
The parameters for OLA4000 in Maker Parameters menu of System Maintenance can be activated only when OLA4000 is connected.
Must **Not** be activated if no OLA4000.

・Some parameters of **"Reagent Formula"** are changed.

・Some parameters of **"ISE Parameters - etc"** are changed.

Slope Check Range High1	: Change the value from 65 to 68 on Version 3.0
Slope Check Range High2	: Change the value from 65 to 68 on Version 3.0

・End Calibrator No.(Other) of **"User's Parameter - ACAL/QC"** is changed from 80 to 200 on Version 4.0.

・All parameters of **"User's Parameter - Auto Preparation"** is added on Version 4.0.

・All parameters of **"User's Parameter - etc"** is added on Version 4.0.

[28] After completion of re-entry the parameter of System Maintenance, you click "END" on Main System Maintenance Menu after save and Click "Start" of Windows NT and select "Shut down ", and wait until PC says "It is now safe to turn off your computer".

[29] Press "EM STOP"

[30] If you'll update from Ver2.0/Ver2.1, replace ISE IPL ROM(MV2191) to Ver1.2. And then press "Reset", and "ON" of the ANL.

That's all.

----------In the case of update from V4.0----------

[0] Boot up the AU640.

[1] Press “Q” key while “Wait a moment” message is displaying.

[2] Click the “END” button on window.

[3] Insert Program CD-ROM.

[4] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press “OK”. Do not run Setup.exe from Explore.

[5] Press “Next” twice.

[6] Select “Custom” and click “Next”.

[7] Remove “√“ marks on the Parameter files, Data files and Other data files.
Caution: The remaining files must attach “√“ marks.

[8] Click “Next”. It will start loading, and follow the screens.

[9] After completion of Set-up, select “Yes, I want to restart my computer” and press “Finish”.
Press “Q” key while “Wait a moment” message is displaying.

[10] Set up other parameters according to the ANL conditions.

<Caution>
Please do not check(mark) the ReagentRest Count Type.

Please do not check(mark) the ADV_CAL.

The parameters for OLA4000 in Maker Parameters menu of System Maintenance can be activated only when OLA4000 is connected.
Must **Not** be activated if no OLA4000.

[11] Click “END” on the main system maintenance menu after “SAVE”.

[12] Click “Start” of Windows NT , select “Shut down” and press “Yes”.
Wait until PC says “It is now safe to turn off your computer”.

[13] Press “EM STOP”

[14] If ISE IPL ROM(MV2191) is not Ver1.2, you have to replace ROM to Ver1.2
And then press ”Reset”, and “ON” of the ANL.

----------In the case of new installation of AU640 program----------

[0] Boot up the AU640.

[1] Press “Q” key while “Wait a few seconds” message is displaying.

[2] Click the “END” button on window.

[3] Insert Program CD-ROM.

[4] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press “OK”.
Do not run Setup.exe from Explore.

[5] Press “Next” twice.

[6] Select “Typical” and click “Next”. It will start loading, and follow the screens.

[7] After completion of Set-up, select “Yes, I want to restart my computer”.
And press “Finish”.

[8] Press “Q” key while “Wait a seconds” message is displaying.

[9] Install Acrobat, INI files and DAO on the system maintenance menu.

[10] Set up other parameters according to the ANL conditions.

<Caution>
Please do not check(mark) the ReagentRest Count Type.

Please do not check(mark) the ADV_CAL.

The parameters for OLA4000 in Maker Parameters menu of System Maintenance can be activated only when OLA4000 is connected.
Must **Not** be activated if no OLA4000.

[11] Click “END” on the main system maintenance menu after “SAVE”.

[12] Set up Windows NT Screen Property. Refer to next page.

[13] Click “Start” of Windows NT , select “Shut down” and press “Yes”.
Wait until PC says “It is now safe to turn off your computer”.

[14] Press “EM STOP”

[15] If ISE IPL ROM(MV2191) is not Ver1.2, you have to replace ROM to Ver1.2
And then press ”Reset”, and “ON” of the ANL.

<Windows NT Screen Property setup>

[1] Show Screen Property of Windows NT(Control panel)
[2] Set Color palette to 65536 colors.

<Note>

1. Program Version

DPR	Program Ver. 4.2
ANL	Program Ver. 4.10
ISE(IPL)	Program Ver. 1.20
ISE(Control)	Program Ver 1.21

You have no use for ISE（Control) Program Installation (down load) procedure.

ENGINEERING CHANGE NOTICE (■English / ■Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No. : 521-0145	REV.	PAGE
AU640	ISE IPL ROM Version UP	■ DCN □ TCN	ECR No. : — CMN No. : AU640-029	B	01/02

DATE :	ISSUED BY :	APP.	T.Banno
Apr./26/2002	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO., LTD	APP.	A.Toyama
		CHK.	T.Amemiya
		DSGN.	H.Yamamoto

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE EC No. :	DOCUMENT TO BE REFERRED :
■ ALL □ PART OF "SHIPPED"	■ PERMANENT		
□ FROM NEXT SHIPMENT (#0883 ,TIME May./2002)	□ TEMPORARY UP TO	RISK ANALYSIS (■Yes □No)	CLAIM CARD TO BE REFERRED :
	□ SPECIAL		

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART				COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB		UP	DW	NO
M016-ANL11	MU5492	A5	A6	M015PPR01	MV2191	MU5360	V1.0	V1.2		○				○	
M016-ANL21	MU6698	A0	A1												

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE
US : USABLE RP : REPAIR AB : ABANDON

1. Reasons of change
2. Contents of change
3. List of articles for modification
4. List of jigs , tools , inspection apparatus for modification
5. Modification method & work load
6. List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? □Yes ■No)

If Yes , provide explanation :

PROCEDURAL AND OPERATIONAL CHANGES (Any procedural or operational chang □Yes ■No)

If Yes , provide description :

LABELING CHANGES (Any changes to Service or Technical documentation? □Yes ■No)

If Yes , provide information :

☆To : Technical Service Department (OT) Please fill in this space.

ENGINEERING CHANGE NOTICE

EC NO.	PAGE
521-0145	02/02

1. Reasons of change

MV2190(ISE CPU Board) may be broken by over current, when ISE stay in the ISE Program Down Load Mode for a long time, because the MIX Motor Driver IC is not initialized in down load mode.
So that we repair the program(MV2191:ISE IPL ROM) perform the IC initialize in down load mode.

2. Contents of change

Version UP for MV2191 from V1.0 to V1.2.
Version UP for M016-ANL11 from A5 to A6.
Version UP for M016-ANL21 from A0 to A1.

3. List of articles for modification

- MU5360 (MV2191(V1.2))
- ROM Remoer

4.Modification method & work load

- Please replace the ISE IPL ROM(MV2191) on M015 CPU Board(MV2190) to update the program from V1.0 to V1.2.

- work load : 0.5 H

5.Scope

If it has occurred, please apply this ECN.

ENGINEERING CHANGE NOTIC ☑ English/ ☐ Japanese

INSTRUMENT	TITLE:	TYPE :	ECN No. : 526 - 0030	REV.	PAGE
AU640	System Program for Asia Version UP(V 5.0)	☑ DCN ☐ TCN	ECR No. : - CMN No. : AU640 - 046	A	1 / 22

DATE:	ISSUED BY :		
Dec.06,2002	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO., LTD	Approved	*A.Toyama*
		Checked	*T.Amemiya*
		Designed	*H.Yamamoto*

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE	DOCUMENT TO BE REFERRED :
☑ ALL ☐ PARTS of SHIPPED	☑ PERMANENT	EC No 521-0166/526-0037	
☐ From Next Shipment	☐ TEMPORARY up to ( )	RISK ANALYSIS	CLAIM CARD TO BE REFERRED :
	☐ SPECIAL	☑ Yes ☐ No	

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART			COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RB	AB	UP	DN	NO
				PROGRAM	MV3311	MU8301	4.2	5.0			Yes			Yes

DCN DESIGN CHANGE NOTICE
TCN TECHNICAL CHANGE NOTICE

US : USABLE AB : ABANDON
RP : REPAIR

1 Reasons of change
2 Contents of change
3 List of articles for modification
4 List of jigs , tools , inspection apparatus for modification
5 Modification method & work load
6 List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐ Yes ☑ No)

If Yes , provide explanation :

PROCEDURAL and OPERATIONAL CHANGES (Any procedural or operational change ☐ Yes ☑ No)

If Yes , provide description :

LABELING CHANGES (Any changes to Service or Technical documentation? ☐ Yes ☑ No)

If Yes , provide information :

*To : Technical Service Department (OT) Please fill in this space.

ENGINEERING CHANGE NOTICE

EC NO.	PAGE
M526 - 0030	2 / 22

1. Reasons of change

Problem solution and specification change.

2. Contents of change

Update system program from Ver 5.0

Please refer to the attached History Table A and B.

3. List of articles for modification

MV3311 Ver 5.0

4. List of jigs , tools , inspection apparatus for modification

5. Modification method & work load

Install the system program of MV3311 Ver 5.0

Measure more than 30 Samples to confirm the instument working correctly.

Work load : 1.0 H

6. List for comparison between new and old part number

(Repair and Spare parts only)

DESIGN VALIDATION REPORT

REPORT No.	A135-35A	1/3

VALIDATED PRODUCT	AU640/AU640^e (M521/M526) foreign standard software V5.0 (SOFTWARE CONFIGURATION SET No. OA:03, ODC:03, Asia:03)	VALIDATED FOR:	Rev. Up	TIMES OF VALIDATION .1	NUMBER OF TESTED PRODUCT: 2
ITEM OF PROCESS CHAGE	PRODUCTS STANDARD, SOFTWARE SPECIFICATIONS, OPERATOR's MANUAL				
POLICY OF THE VALIDATION	Confirm the development process which is evaluated by the R & D and QA. QA evaluates and confirms the modified portion of the software by using the actual instrument.			OVERALL JUDGMENT	QUALIFIED
CORRESPONDANCE OF LAWS AND REGULATION	Correspondance of FDA (510K) and FDA-QSR: OK				
OPINION	As the results of the design validation, the version up software is functioning without any problems.			PRODUCT STANDARD	YES

ITEM	RESULTS AND PROBLEMS	JUDGMENT	REMARKS
★SPECIFIC NEEDS OF THIS PRODUCT			
1) SPECIFICATIONS OF PRODUCTS STANDARD	*Confirmed the changed portion of Product Standard: Found no problem. 1. Reagent barcode (Bottle type) 2. Reagent barcode (Bottle number)	OK	
2) ITEM OF SOFTWARE SPECIFICATIONS	*Confirmed the changed portion of specification; Found no problem. 1. New Reagent Barcode 2. Reagent Lot number check 3. Advanced Calibration	OK	
3) PACKAGING	Not applicable	—	
4) LABELING ・OPERATOR's MANUAL ・LABEL ・CRT DISPLAY ・SERVICE MANUAL	1. Confirmed the changed portion of followings: Found no problem. ① OPERATOR's MANUAL ② LABEL ③ CRT DISPLAY 2. SERVICE MANUAL: Not applicable	OK	
★GENERAL NEEDS			
1) OPERATIONAL EASINESS MAINTENANCE EASINESS ERGONOMICS	Not applicable	—	
2) SAFETINESS	Not applicable	—	
★INTENDED USES			
1) SCOPE OF PRODUCT STANDARD AND SPECIFICATIONS	Not applicable	—	
2) USAGE CAUTION OF OPERATOR's MANUAL AND INSTALATION CONDITION	Not applicable	—	
★RISK ANALYSIS			
1) ITEM OF TOTAL RISK ANALYSIS SHEETS	Not applicable	—	
2) ITEM OF RISK ANALYSIS SHEETS	*Confirmed the portion of countermeasure; Found no problem.	OK	

SERIAL NO. OF THE DEVICE FOR THIS VALIDATION	1100001, 1100002	APPROVED BY	I. Abe
DATE OF EXAMINATION/VALIDATION (Dates of validation or evaluation for Overall Judgment)	December 02, 03, 04, 05 of 2002	CHECKED BY	K. Konishi
Issued date of Quality Assurance Planning Department, Diagnostic Equipment Division	December 05, 2002	VALIDATED BY	H. Kishida
		VALIDATED BY	M. Yamada

DESIGN VALIDATION REPORT (DETAILS)

REPORT No.	A135-35A	2/3

VALIDATED PRODUCTS	AU640/AU640e (M521/M526) foreign standard software V5.0 (SOFTWARE CONFIGURATION SET No. OAI:03, ODC:03, Asia:03)

ITEM	RESULTS AND PROBLEMS	JUDGMENT	REMARKS
★ANALYSIS DATA			
1) PRECISION		OK	
2) WITHIN DAY VARIATION	Not applicable	—	
3) BETWEEN DAY VARIATION	Not applicable	—	
4) CONTAMINATION	Not applicable	—	
5) COMPATIBILITY	Ver.5.0/Ver.4.2 (Contrastive PRG)	OK	
★WITHSTAND TYPE TEST			
1) TEMPERATURE AND HUMIDITY TEST	Not applicable	—	
2) ELECTRICITY TEST	Not applicable	—	
3) TRANSPORT PACKAGE TEST	Not applicable	—	
4) REPEAT TEST	Not applicable	—	
5) CHEMICAL CORROSION RESISTANCE TEST	Not applicable	—	
★TOTAL EVALUATION			
1) FUNCTION & PERFORMANCE		OK	
2) RELIABILITY		OK	
3) OPERATIONAL EASINESS	Not applicable	—	
4) SAFETINESS	Not applicable	—	
5) MAINTENANCE EASINESS	Not applicable	—	
6) SERVICE EASINESS	Not applicable	—	
7) APPEARANCE	Not applicable	—	
8) SOUND LEVEL	Not applicable	—	
9) REGULATORY RULES		OK	
10) OPERATOR'S MANUAL		OK	
11) SERVICE MANUAL	Not applicable	—	
12) STANDARD ASSEMBLY MANUAL	Not applicable	—	
13) INSPECTION REPORT	Not applicable	—	
14) OTHERS	Not applicable	—	

★REFERENCE

We have approved that the V5.0 was qualified by the R&D and QA evaluation. The following test reports are issued by R&D. which show the detailed contents of the evaluation.

*The software test procedure / Report MP0287/MP0288/0289/0290 P7 (M521/526 Standard software for Japan/OAI/ODC/Asia V/R 5.0)

*The program test procedure / Report MP0292/0293/0294/0295 P7 (M521/526 DPR Standard program V/R 5.0)

*The program test procedure / Report MP0296 (M521/526 ANL Standard program V/R 5.0)

*The technical report / AU640 PRG (Ver. 5.0 for OAI) Verification by Mr. K. FUJIMORI on Nov. 24, 2002

*The technical report / AU640 design verification for software version up (Reagent barcode reading test) by Mr. T. NAGATA on Nov. 22, 2002.

*The technical report / AU640 Detergent concentration problem countermeasure test by Mr. K. KAKIZAKI on Nov. 22, 2002.

<Software Class>

SoftWare Configuration	Set No. 1	Set No. 2	Set No. 3	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.	Set No.

<Media Class>

Name	Type	No.	Ver.Rev.	Ver. Rev.	Ver.Rev.	Ver.Rev.	Ver.Rev.	Ver.Rev.	Ver. Rev.	Ver. Rev.	Ver.Rev.	Ver. Rev.
AU640 System Program	CD-R	MV3311	4.0	4.2	5.0							
ANL IPL	ROM	MV2181	1.0	<=	<=							
ISE IPL	ROM	MV2191	1.2	<=	<=							
Photometer Control	ROM	MV1037	2.2	<=	<=							
ISE/BarCode Com. Control	ROM	MV2611	1.0	<=	<=							
LAN Mastaer Control	ROM	MV1030	3.0	<=	<=							
R1/R2 Ref. Control	ROM	MV2352	1.0	<=	<=							
S-Probe Control	ROM	MV2351	1.0	<=	<=							
R1/R2-Probe Control	ROM	MV2330	1.0	<=	<=							
S/R1,R2 Mix Control	ROM	MV2353	1.0	<=	<=							
Rack Feeder/Stat Control	ROM	MV2348	1.1	1.0or1.1 *1	<=							
Rack Receiver Control	ROM	MV2349	1.0	<=	<=							
S/R1/R2 Cyringe Control	ROM	MV2350	1.0	<=	<=							

<Common Class>

NOTE	FirstVersion	Adapt to M521								
UP DATE	S.Iguchi	H.Yamamoto	H.Yamamoto							
	Apr/09/2002	May/25/2002	Dec/06/2002							
RELEASED	S.Iguchi	S.Iguchi	H.Yamamoto							
	Apr/09/2002	May/27/2002	Dec/06/2002							

SoftWare History Table A [Media]	Type	M521/526 Standard Software for Asia	No.	MP0290Q7	Page	1	NextPage	-

*1 : No use for update in market except M525 (M521 with LA)

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
1	<Specification Change> New barcode (increase each digits for bottle type and bottle number by one) become available. 〈仕様変更〉 ボトルタイプ／ボトルNo.桁数増加に対応できる様に変更。	ODI
2	<Additional Specification> When 'Usage of Different Lot No. Reagent' is set to ON in "System Maintenance" menu, Lot No. Check function is activated. 〈仕様追加〉 システムメンテナンスメニューの「Usage of Different Lot No. Reagent」を「ON」に設定すると、ロットNo.チェック機能を有効とする。	PSR OAI Requests No.7
3	<Specification Change> In the sample blank items which are set as advanced calibration, multiple bottles are available. 〈仕様変更〉 アドバンスドキャリブレーションにおける検体ブランク項目の複数ボトルに対応できる様に変更。	PSR ODC Requests No.6

NOTE

ISSUED BY

S.Iguchi

Oct.30.2002

SOFTWARE HISTORY TABLE B	SOFT. TYPE	M521/526 Standard Software for Japan/OAI/ODC/Asia	TYPE NO.	MP0287 Q7 MP0288 Q7 MP0289 Q7 MP0290 Q7	PAGE ／ NEXT	1	2

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
4	<Problem Solution> An item may be run by another parameter in case that a reagent except a LIH-dedicated reagent is set as the reagent of the LIH judgement in “Test Name” menu, “96.LIH” still be registered and can be seen in the “Round” menu. (We revise the software as followings. The software of the instrument notifies the operator that condition and the operator can not start by parameter check function in a condition. The condition is that a reagent except a LIH-dedicated reagent is set as the reagent of the LIH judgement in “Test Name” menu, “96.LIH” still be registered and can be seen in the “Round” menu.) 〈不具合対応〉 「項目名設定」メニューにおいて、「血清情報（LIH）使用試薬項目」に「96.LIH」（専用試薬）以外を使用すると設定していたとしても、「ラウンド設定」メニューにおいて「96.LIH」の設定が残っている状況下で、ある項目が、それ以外の項目の分析条件で分析される場合がある不具合修正。 （パラメータチェック機能により、「項目名設定」メニューにおいて、「血清情報（LIH）使用試薬項目」に「96.LIH」（専用試薬）以外を使用すると設定していたとしても、「ラウンド設定」メニューにおいて「96.LIH」の設定が残っている状況である場合、操作者にその状況であることを通知し、かつ、分析開始できないように変更。）	OT CC 035-0271
5	<Problem Solution> In the “Data Edit” menu in measure mode, you edit the data of samples that has NOT measured and that has a larger sample number than the MAX measured sample number. The software of the instrument will alter the next start sample number with the edited sample number +1 at ordering that the instrument measures samples additionally without shifting to “STAND BY” mode or “STOP” mode in the same run (Same Index). 〈不具合対応〉 分析中に、まだ分析が完了していない、かつ、分析済みMAX S.No.よりも大きいS.No.の検体のデータ「データ編集」メニューにて編集する。この時、装置のソフトウェアは、同一分析（同一インデックス）において、次再スタート（スタンバイ／ストップモードへ移行せずに、分析検体の追加分析指示を行う）時のスタートS.No.を（前記データ編集を行った検体のS.No.+1）に変更する不具合修正。	OT R&D
6	<Problem Solution> When you perform measure start, S.No is able to be set to ‘Space’ in the dialog displayed by pushing “Change Select” to change start S.No. 〈不具合対応〉 分析開始時のS.NO.変更ﾀﾞｲｱﾛｸﾞにてS.No.のｽﾍﾟｰｽ入力が出来てしまう不具合修正。	OT R&D

NOTE	ISSUED BY
	S.Iguchi
	Oct.30.2002

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
7	<Problem Solution> When you do not analyze all analysis tests subject to calculation to find value of inter-item calculation tests in re-run of same sample, the value of inter-item calculation tests is lost. 〈不具合対応〉 同一ｻﾝﾌﾟﾙの再分析時に被演算項目が揃わない状態で分析した場合に、演算項目のデータが消える不具合修正。	OT R&D
8	<Problem Solution> Even if the test is set to 'Use Serum Cal', Calibration Stability can be set in "Edit" dialog of "Reagent Status" menu. (In case that Calibration Stability Period is set before Use Serum Cal is changed to ON.) 〈不具合対応〉 血清Ｃａｌ．使用でも、編集画面にてキャリブレーションスタビリティーを入力できる不具合修正。（血清Ｃａｌ．使用に変更する場合に、既にキャリブレーションスタビリティーの設定がされていた場合。）	OT R&D
9	<Problem Solution> When the Reagent tray in first reagent dispensing of a measure is same as that of reagent tray performed to reset, "REAGENT REF. ROTATION ERROR" happens. 〈不具合対応〉 分析開始時、初めの試薬吸引位置が、試薬保冷庫リセット位置と同じだった場合、保冷庫回転異常となる不具合修正	OT CC 034-0122
10	<Problem Solution> When the rack is carried from LA (Laboratory Automation) system into AU at the end of Measure Mode, 3144(NO VACUUM PRESSURE) ERROR happen. (This phenomenon will just occur with LA Option) 〈不具合対応〉 LA付きの場合、分析終了間際にﾗｯｸが投入されると、陰圧不足ｴﾗｰが発生する不具合修正	OT-R&D

NOTE	ISSUED BY
	S.Iguchi
	Oct.30.2002

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
11	<Problem Solution> Some internal constants, not values in an internal table designed in AU system program are used as surplus-dispense-volume values in calculation of 'R1/2 VOLUME OF TESTS' of Work Lists and Data Lists. However, those values are correct. Therefore, this problem solution does not make difference between a software with earlier version than Ver.5.0 and that with Ver.5.0. 〈不具合対応〉 ワークリスト、検査台帳の項目別第１／２試薬使用量算出において、試薬余剰分注量として、ＡＵシステムプログラム内に設計されたテーブルの値ではなく、プログラム内の既定値を用いて演算してしまう不具合修正。 但し、その値は正しい値である。故に、この不具合対応により、Ver.5.0より前とVer.5.0で差異は生じない。	OT R&D *
12	<Problem Solution> A displayed message is incorrect when "Set Date and Time" menu is opened and Measure Start is ordered. Can not start Measure during Reagent check, ISE BUSY, Wash, etc. ---→ Can not start Measure with Maintenance menu open. 〈不具合対応〉 「時刻設定」メニュー起動中に、分析開始指示をした際のメッセージが不正である不具合修正。 試薬ﾁｪｯｸ中・ISE BUSY・洗浄中などの場合、分析開始できません。 ----→ **ﾒﾝﾃﾅﾝｽﾒﾆｭｰ表示中は、分析開始できません。**	OT R&D *
13	<Problem Solution> Regarding performing W2+Photocal This specification is as following. When mode is 'Warm Up' in end of W2, AU system takes the maximum time from 'WARM UP' to 'STAND BY' in case that you power on AU system after EM stop into account. In this case, AU system adds the time to original photocal time and displays the time and then AU system start count down the time. AU system should adjust the time when mode is changed to 'STAND BY'. However, it is not performed when mode is changed to 'STAND BY' by "Stand by set" menu. 〈不具合対応〉 Ｗ２＋フォトキャル実施において、 本来であれば、Ｗ２を終了した時点では、ＥＭ ＳＴＯＰされた状態からの立ち上げを考慮し、ウォームアップ モードからスタンバイ モード移行までの最大時間を加算し、フォトキャル時間を表示し、カウントダウンを開始するが、スタンバイ モードに移行した時点でフォトキャル時間の表示を調整する。しかし、強制スタンバイでスタンバイ モードに移行した場合、この調整が行なわれない。	OT R&D *

NOTE

*:M526(Ver4.0/4.1/4.2)で発生する不具合
*:This problem happen on M526(only Ver4.0/4.1/4.2)

ISSUED BY
S.Iguchi
Oct.30.2002

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
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AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
14	<Problem Solution> Even if you fail to ACAL of ISE, Calibration requisition to ISE is not automatically performed. 〈不具合対応〉 ISEのACALが失敗していても、項目毎全選択ボタンを押したとき、キャリブレーション受付のISE項目の自動選択がされていない不具合修正。 不具合の為 本バージョンにて名称修正：項目毎全選択→項目自動選択	OT R&D *
15	<Problem Solution> When "PrintOut Pattern" is set to 'Pattern_2' in "System Maintenance" Menu and Hard Copy is performed, screen area in black is printed out. 〈不具合対応〉 "PrintOut Pattern"の設定が「Pattern_2」でﾊｰﾄﾞｺﾋﾟｰが真っ黒になる不具合修正。	OT CC 035-0196 *
16	<Problem Solution> When there are all bottles needed for the Round in reagent tray but the some bottles reagent have no reagent (For example, you set them newly and do not performed "Reagent Check") "Reagent of Group" in "Reagent Status" menu is displayed in yellow. 〈不具合対応〉 必要な試薬ボトルがあるのに、試薬残量が0（例えば、試薬ボトルを新たにセットし、試薬残量が0）の場合、ラウンド試薬ｾｯﾄが黄色。	OT R&D *
17	<Problem Solution> When you update the software from a software with earlier version than Ver.4.0 to a software with Ver.4.2, Menu Level of lower lines than "Reagent Inventory" Menu in "Login Name" menu shifts up by 1 line. 〈不具合対応〉 Ver.4.0よりも前のﾊﾞｰｼﾞｮﾝからVer.4.2へバージョンアップ後、「ログイン名」メニューにおいて、「試薬使用量」メニューより下の行のメニューレベルが１列上にずれる不具合修正。	OT R&D *

NOTE

*:M526(Ver4.0/4.1/4.2)で発生する不具合
*:This problem happen on M526(only Ver4.0/4.1/4.2)

ISSUED BY
S.Iguchi
Oct.30.2002

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
18	<Problem Solution> In usage for Japan or Asia (: when ADV_CAL is set to 'NO'), Auto Cal/QC is not available. 〈不具合対応〉 国内版、一般地域向け運用（非AdvCal版）で、自動Cal、QCができない不具合修正。	OT CC 035-0260 *
19	<Problem Solution> Even if calibration ends in failure, "Failed Calibration" comment is not printed out in some cases. 〈不具合対応〉 キャリブレーション失敗でも「キャリブレーション失敗」コメントを印字しないことがある 不具合修正。	OT R&D *
20	<Problem Solution> Current data is not able to printed not in "Calibration Curve" menu. For example, in the following Print Mode ・Without Factor ・Recent Data ・Current Test 〈不具合対応〉 検量線表示において、最新のデータが印刷できない。 例えば、以下の印刷モードにおいて、 ・ファクタ除く ・最新データ ・表示項目のみ	ODI CC 235-312 *
21	<Problem Solution> [Only for Japan] The name of some buttons is different from Users' Manual. 〈不具合対応〉 [日本向けのみの対応] キャリブレーション受付、STATキャリブレーション受付画面において、ﾎﾞﾀﾝ名称が取説と異なる 不具合修正。 （ソフトウェアにおける表示を修正。 項目別全選択->項目自動選択）	OT R&D *
22	<Problem Solution> When you put "File":F4 key in printing, the alarm "2006 PRINTER NOT AVAILABLE" is displayed and you can't output the File "ReagentConsumption". 〈不具合対応〉 印刷中にファイル(F4)を押下すると、警報「2006ただ今、プリンターは使用できません。」が出力され、「ReagentConsumption」ファイルを出力できない不具合修正。	OT R&D *
23	<Problem Solution> [Only for destination except for OAI] You are not able to open Menu Help in "Reagent Inventory" menu. 〈不具合対応〉 [OAI以外の仕向け地のみ] 「試薬使用量」メニューにおいて、メニューヘルプの表示ができない不具合修正。	OT R&D *

NOTE	ISSUED BY
*:M526(Ver4.0/4.1/4.2)で発生する不具合 *:This problem happen on M526(only Ver4.0/4.1/4.2)	S.Iguchi Oct.30.2002

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
24	<Problem Solution> If the Log in function is in use the following menus are not accessible. Maitenance/Data Operation all sub menus Auxiliary/Reagent Inventory are shown in light gray. For example, For all menus Level 1 was set, and we logged in with Level1- no access. Even the access to menus with lower level is denied. 〈不具合対応〉 ログイン機能使用時に以下のメニューにアクセスできない不具合修正。 メンテナンス／データ処理以下の全メニュー、補助／試薬使用量メニューが灰色で表示される。 例えば、 全メニューをレベル１に設定し、レベル１でログインしてもアクセスできない。 また、レベル１よりも低いレベルのメニューでさえアクセスできない。	ODC CC 235-272 *
25	<Problem Solution> In FD Data Management of software with Ver.4.0, Ver.4.1 or Ver.4.2, you are not able to see the data saved in software with earlier than Ver.4.0. 〈不具合対応〉 Ver.4.0、または、Ver.4.1、または、Ver.4.2のソフトウェアにおいて、FDデータ管理メニューでVer.4.0よりも前のソフトウェアで保存されたデータを参照できない不具合修正。	OT R&D *
26	<Problem Solution> If you update the software from a software with earlier version than Ver.4.0 to a software with Ver.4.2 and then you do not save any parameters after opening Maker Parameters, Reagent Formula(Maker 1) or Reagent Formula(Maker 2) in System Maintenance, AU systems use only one tenth of appropriate detergent volume. 〈不具合対応〉 Ver.4.0よりも前のﾊﾞｰｼﾞｮﾝからVer.4.2へバージョンアップ後、システムメンテナンスメニューのMaker Parameters、Reagent Formula(Maker 1)、Reagent Formula(Maker 2)を開き、パラメータセーブ処理を行わなければ、洗剤液量が適切な使用量の１／１０のみしか使用されない不具合修正。	OT CC 035-0322 *

NOTE	ISSUED BY
*:M526(Ver4.0/4.1/4.2)で発生する不具合 *:This problem happen on M526(only Ver4.0/4.1/4.2)	S.Iguchi Oct.30.2002

MEDIATYPE		Ver/Rev	MEDIATYPE		Ver./Rev.
AU640 System Program for Japan	MV3308	5.0			
AU640/400e System Program for OAI	MV3309	5.0			
AU640 System Program for ODC	MV3310	5.0			
AU640 System Program for Asia etc	MV3311	5.0			

No.	CONTENTS	REMARKS
27	<Additional Specification> When text numbers are set in 'Anl. Com. Log Inhibit' of "System Maintenance" Menu, the text is not logged to 'AnlCommunication.Log' file. Generally, 'AnlCommunication.Log' file is used to analyze troubles. However, in old specification, the number of texts logged is short and the period in which the texts are saved is short. Therefore, addition this function to new specification improves above situation. You change these parameters in cases that developers order. You must not change them in the other cases. 〈仕様追加〉 システムメンテナンスメニューの「Anl. Com. Log Inhibit」に、電文番号が設定されていると、その電文は「AnlCommunication.Log」ファイルに登録されません。 「AnlCommunication.Log」ファイルはトラブル解析情報として利用されるが、現状は登録される電文の数が不足し、登録されている期間が短い。登録される電文を減らすことにより、これを改善する。 開発者の指示があった場合のみ、本設定の変更を行います。 それ以外の場合には変更しないでください。	OT R&D

NOTE

ISSUED BY

S.Iguchi

Oct.30.2002

Installation Procedures for the Ver.5.0 on the AU640

If you up date from V2.0/V2.1/V4.0/V4.2, follow the step **In the case of update from V2.0/V2.1/V4.0/V4.2.**

If you install AU640 for PC that is **not** currently using with AU640, follow the step **In the case of new installation of AU640 program**.

----------**In the case of update from V2.0/V2.1/V4.0/V4.2**----------

Caution: If you update , the following data are initialized.
This procedure initializes “Reaction Data” in case “Start Condition” menu has more than 90 indexes except “Current Time” on V2.0/V2.1. Because the database for “Reaction Data” possibly is under illegal condition.
Besides the above case, if you can not see reaction data that is stored in the past after this update, you need to initialize reaction data in System Maintenance.

- Use System Maintenance Menu after this version to initialize reaction data except “EXCEPTIONAL CASE” in [23].
- Not initialize reaction data for no reaction data.

In other cases, if some data is under illegal condition, system possibly initializes those data.

If the hard disk of the DPR does not have enough free space,
you can not update and you need to prepare another hard disk which has enough free space.

[0] Confirm the number of indexes except “Current Time” in “Start Condition” menu.
[1] Boot up the AU640.
[2] Press “Q” key while “Wait a few seconds” message is displaying.
[3] Click the “END” button on window.
[4] Insert Program CD-ROM.
[5] Select Start – Run from NT, and D:\Utility\Cnv20_50\Cpycnv.bat
(drive name may be different depends on HD partition) and press “OK”.
Do not run Cpycnv.bat from Explore.

[6] A window is open on the screen, and the message as below is displayed.

' **** START [Copy Ug_cnv] ****
Press any key to continue. . .

[7] Then, Press any key and copying files for converter to hard disk are started disk on the window.

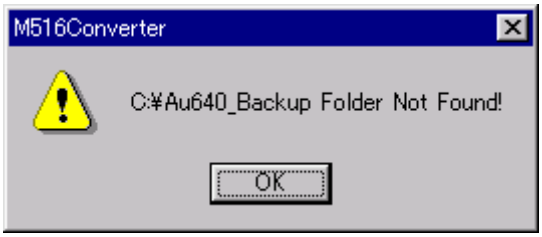
When finishing it, you can see the message as below.

' **** END [Copy Ug_cnv] ****
Press any key to continue. . .

[8] Then, Press any key and close the window.

[9] Select Start – Run from NT, and C:\UG_CNV\M526Converter.exe
and press “OK”.
Do not run M526Converter.exe from Explore.

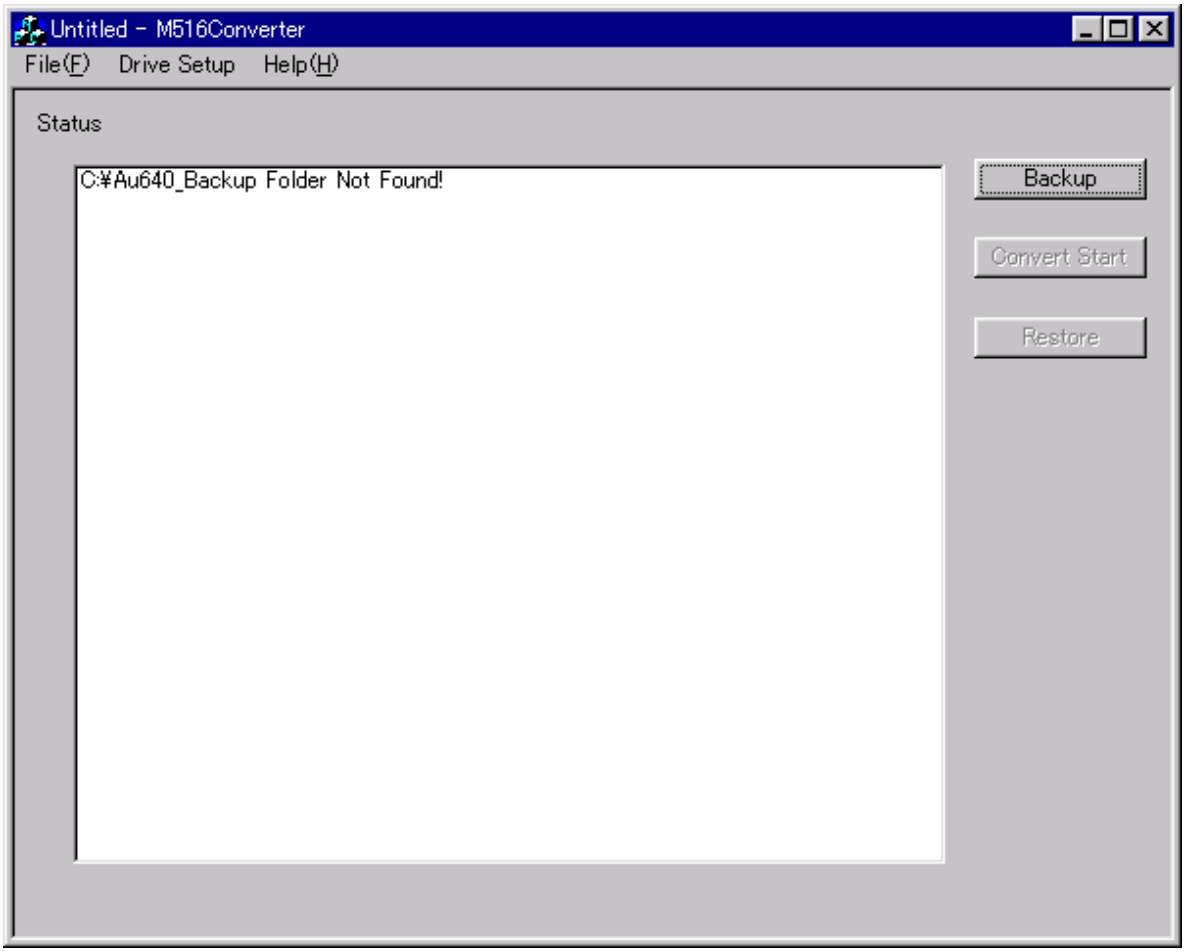
[10] A following message is displayed.
However, if “AU640_Backup” folder already exists in the drive, which files are saved to, this message is not displayed.



Press “OK”.

[11] A below screen is displayed.

The status of function buttons (“Backup”, ”Converter Start”, “Restore”) of this Converter tool is

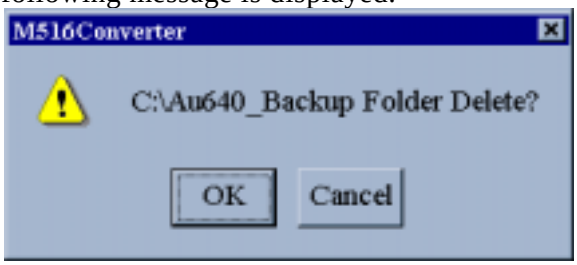


displayed according to folders already existing on each drive by the time this tool is started up.
The drive, which files are saved to, is selectable by “Drive Setup” menu.
The drive, which files are restored from, is same as the above drive.
The status of these function buttons is not changed by change of the existing folder on each drive by things except this tool or change of a drive (, which a file is saved to), after this tool was started.

[12] Press “Backup”.

If the drive, which files are saved to, has enough free space, the backup process will be
started.
If the drive, which files are saved to, does not have enough free space, the following message will appear.
In this time, please prepare another hard disk (drive), which has enough free space, and try to update again.

If “AU640_Backup” folder already exists in the drive, which files are saved to, the following message is displayed.



“AU640_Backup” folder probably was made by a former “Installation Procedures”. Press “OK”. “M526Converter.exe” delete the old “AU640_Backup” folder and newly save current AU640 as “AU640_Backup”.

[13] After completing backup, you’ll press the button “×” on the Up-right corner of this tool.

[14] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press “OK”.
Do not run Setup.exe from Explore.

[15] Press “Next” twice.

[16] Select “Typical” and click “Next”. It will start loading, and follow the screens.

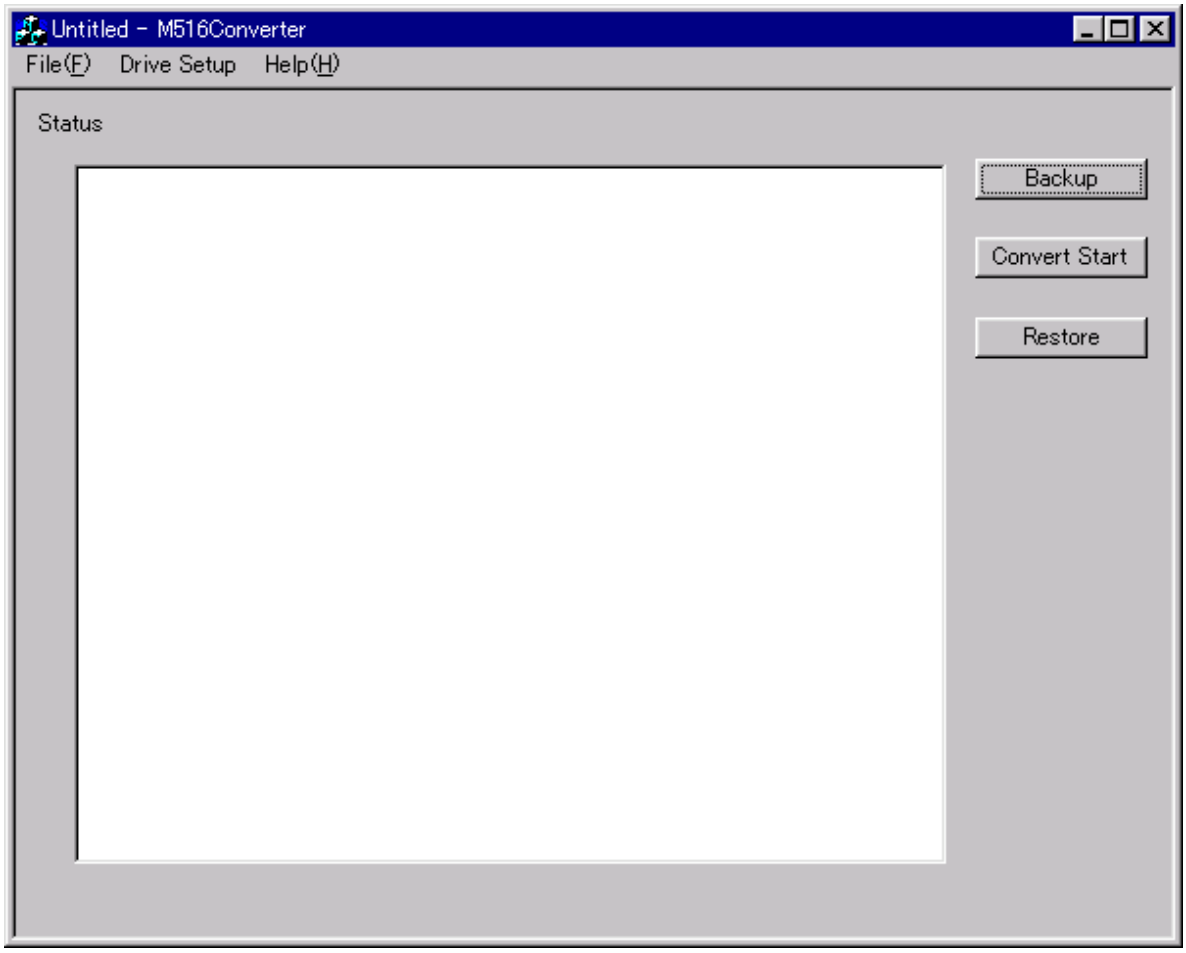
[17] After completion of Set-up, select “Yes, I want to restart my computer”.
And press “Finish”.

[18] Press “Q” key while “Wait a few seconds” message is displaying.

[19] Click the “END” button on window.

[20] Select Start – Run from NT, and C:\UG_CNV\M526Converter.exe
and press “OK”.
Do not run M526Converter.exe from Explore.

[21] A below screen is displayed.



[22] Press “Convert Start”.

[23] After completing conversion, you’ll press the button “×” on the Up-right corner of this tool.
If the installed software version is not correct, some errors will happen.
In this time, this tool can not convert files.
Please confirm error messages and do “Restore”.
In this case, Folder “AU640”, which already exists, is deleted.
Besides the above case, there are some cases where you need to do “Restore”.

//

“EXCEPTIONAL CASE”

If you can not convert files due to Dr. Watson occurrence and so on in this procedure, some database probably is corrupted. “M526Converter.exe” is made to avoid these cases as far as possible. But it can not avoid some cases.

//

//
A Measure for “EXCEPTIONAL CASE”
Do “Restore”. Please If you can not convert files due to Dr. Watson occurrence and so on in this
After that, perform the following procedure in the old version.
Please confirm if the following file exists with “explorer.exe”.
C:\AU640\Data\DataFile\CompactTemp.mdb
If this file exists, delete it.
Please confirm that the following file exists with “explorer.exe”.
C:\AU640\Data\DataFile\Reaction.mdb
If so, initialize a database of ”Reaction Data” using System Maintenance menu.
Next, perform the procedures from [12] again.
//

[24] Click “Start” of Windows NT , select “Shut down” and press “Yes” .
Wait until PC says “It is now safe to turn off your computer”.

[25] Press “EM STOP”, ”Reset”, and “ON” of the ANL.

[26] Press “Q” key while “Wait a few seconds” message is displaying.

[27] In the following case, initialize a database of ”Reaction Data” using System Maintenance menu.

・The old version was V2.0/V2.1 and “Start Condition” menu has more than 90 indexes except “Current Time”.

・“EXCEPTIONAL CASE” in [23] and has performed A Measure for “EXCEPTIONAL CASE”.

[28] Set up parameters according to your necessity.

<Caution>

・Some parameters of **“Maker Parameters - etc”** are added or changed.

Concentration of Acid Detergent : Change options from 2%, 3% to 1%, 2% on Version 3.0

Concentration of Acid Detergent : Change options from 2%, 3% to 1%, 2% on Version 3.0

NewTypeISE : Added newly on Version 4.0

NotUseDetergentA : Added newly on Version 4.0

CuvetteFatalFlag : Added newly on Version 3.0

ReagentRestCountType : Added newly on Version 3.0

ADV_CAL : Added newly on Version 4.0

Usage of Diffeerent Lot No. Reagent
: Removed on Version 4.0
: Added again on Version 5.0

If the version up to Ver.4.2 had been performed before and the version up to Ver.5.0 was performed at this time, this parameter becomes the default value (: no check) in spite of parameters set before.

Please do not check(mark) the ReagentRest Count Type.

Please do not check(mark) the ADV_CAL.

・All parameters of **“Maker Parameters – OLA4000”** is added on Version 3.0.
The parameters for OLA4000 in Maker Parameters menu of System Maintenance can be activated only when OLA4000 is connected.
Must **Not** be activated if no OLA4000.

・Some parameters of **“Reagent Formula”** are changed on Version 4.0.

・Some parameters of **“ISE Parameters - etc”** are changed.
Slope Check Range High1 : Change the value from 65 to 68 on Version 3.0.

Slope Check Range High2 : Change the value from 65 to 68 on Version 3.0.

・End Calibrator No.(Other) of **“User’s Parameter - ACAL/QC”** is changed from 80 to 200 on Version 4.0.

・All parameters of **“User’s Parameter - Auto Preparation”** is added on Version 4.0.

・All parameters of **“User’s Parameter - etc”** is added on Version 4.0.

・All parameters of **“Anl.Com.Log Inhibit”** is added on Version 5.0.

You must not change these parameters without developers’ order.

[29] After completion of re-entry the parameter of System Maintenance, you click “END” on Main System Maintenance Menu after save and Click “Start” of Windows NT and select “Shut down ”, and wait until PC says “It is now safe to turn off your computer”.

[30] Press “EM STOP”

[31] If you update from Ver2.0/Ver2.1/V4.0, replace ISE IPL ROM(MV2191) to Ver1.2. And then press ”Reset”, and “ON” of the ANL.

[32] Please be sure to perform Reagent Check on every position without STOP at the next power-on time of ANL.
If not so, “Alarm Shots” parameters do not become effective.

That’s all.

----------In the case of new installation of AU640 program----------

[0] Boot up the AU640.

[1] Press “Q” key while “Wait a few seconds” message is displaying.

[2] Click the “END” button on window.

[3] Insert Program CD-ROM.

[4] Select Start – Run from NT, and D:\Program\Setup.exe(drive name may be different depends on HD partition) and press “OK”.
Do not run Setup.exe from Explore.

[5] Press “Next” twice.

[6] Select “Typical” and click “Next”. It will start loading, and follow the screens.

[7] After completion of Set-up, select “Yes, I want to restart my computer”.
And press “Finish”.

[8] Press “Q” key while “Wait a seconds” message is displaying.

[9] Install Acrobat, INI files and DAO on the system maintenance menu.

[10] Set up other parameters according to the ANL conditions.

<Caution>
Please do not check(mark) the ReagentRest Count Type.

Please do not check(mark) the ADV_CAL.

The parameters for OLA4000 in Maker Parameters menu of System Maintenance can be activated only when OLA4000 is connected.
Must **Not** be activated if no OLA4000.

[11] Click “END” on the main system maintenance menu after “SAVE”.

[12] Set up Windows NT Screen Property. Refer to next page.

[13] Click “Start” of Windows NT , select “Shut down” and press “Yes”.
Wait until PC says “It is now safe to turn off your computer”.

[14] Press “EM STOP”

[15] If ISE IPL ROM(MV2191) is not Ver1.2, you have to replace ROM to Ver1.2
And then press ”Reset”, and “ON” of the ANL.

[16] Please be sure to perform Reagent Check on every position without STOP at the next power-on time of ANL.
If not so, “Alarm Shots” parameters do not become effective.

That’s all.

<Windows NT Screen Property setup>

[1] Show Screen Property of Windows NT(Control panel)
[2] Set Color palette to 65536 colors.

<Note>

1. Program Version

DPR	Program Ver. 5.0
ANL	Program Ver. 5.00
ISE(IPL)	Program Ver. 1.20
ISE(Control)	Program Ver 1.21

You have no use for ISE（Control) Program Installation (down load) procedure.

ENGINEERING CHANGE NOTICE ECN521-0181, 526-0057 (☒English / ☐Japanese)

INSTRUMENT :	TITLE :	TYPE :	ECN No.:526-0057	REV.	PAGE
AU640 (AU640^{e})	Applying New3-1 remainder formula.	☐ DCN ☒ TCN	ECR No.: CMN No.:	A	1 / 4

DATE :	ISSUED BY :		
May 30, 2003	PRODUCT DEVELOPMENT DEPARTMENT DIAGNOSTIC SYSTEMS DIVISION OLYMPUS OPTICAL CO.,LTD.	Approved	Akio Toyama
		Checked	Takashi Amemiya
		Designed	Ryoji Sato

EXTENT OF MODIFICATIONS :	CLASSIFICATION OF CHANGE	PRE-REQUISITE	DOCUMENT TO BE
☐ ALL ☒ PART OF "SHIPPED"	☒ PERMANENT	EC No.:	REFERRED : 135-0256
☐ FROM NEXT SHIPMENT	☐ TEMPORARY UP TO	RISK ANALYSIS	CLAIM CARD TO BE
(# ,TIME)	☐ SPECIAL	(☐Yes ☒No)	REFERRED :

DEVICE MODIFIED		DEVICE VER.		PART MODIFIED			PART VER.		DISPOSITION OF OLD PART			COMPATI-BILITY		
NAME	NUMBER	OLD	NEW	NAME	NUMBER	ORDER#	OLD	NEW	US	RP	AB	UP	DW	NO

DCN : DESIGN CHANGE NOTICE
TCN : TECHNICAL CHANGE NOTICE

US :USABLE AB :ABANDON
RP :REPAIR

1.Reasons of change
2.Contents of change
3.List of articles for modification
4.List of jigs, tools, inspection apparatus for modification
5.Modification method & work load
6.List for comparison between new and old part number (Repair and Spare parts only)

ANALYZER MAINTENANCE (Impact on analyzer maintenance? ☐Yes ☒No)

If Yes, provide explanation :

PROCEDURAL and OPERATIONAL CHANGES (Any procedural or operational changes? ☒Yes ☐No)

If Yes, provide description :

After applying this ECN, it becomes impossible to change the remainder volume of the reagent bottle manually.

LABELING CHANGES (Any changes to Service or Technical documentation? ☐Yes ☒No)

If Yes, provide information :

*To : Technical Service Department (OT) Please fill in this space.

share info.	Yes / No
design failure rank	S / AA / A / B / C / D
spec. chg	
inprovem.	
other	

ENGINEERING CHANGE NOTICE

EC NO.	PAGE
526-0057	2 / 4

1.Reasons of change

To reduce the reagent remainder volume, applying New3-1 remainder formula to the shipped apparatus.

2.Contents of change

Changing the remainder formula to New3-1 remainder formula.

Decide to apply this ECN to which shipped apparatus by each B.C.

3.List of articles for modification

none

4.List of jigs,tools,inspection apparatus for modification

none

5.Modification method & Work load

(1) check the program version is ver. 5.0 or later. If not, update the program.
(2) start the system maintenance, and click "Parameter Set Up" - "Reagent Formula (Maker 1)".
(3) enter New3-1 remainder formula as the table 1-1 to 1-5. (see the figure 1)
(4) check the "ReagentRest Count Type" in "Maker Parameters". (see the figure 2)
(5) save the setting and quit the system maintenance.

6.List for comparison between new and old part number
(Repair & Spare Parts only)

none

Table 1-1 : 15mL bottle

	Correlation value A	Correlation value B	Correlation value	Pulse Range
1	0	0	0	82
2	0.0089	-0.72	0	138
3	0.0128	-1.26	0	405
4	0.0142	-1.83	0	1358
5	0	18	0	32767

Table 1-2 : 30mL bottle

	Correlation value A	Correlation value B	Correlation value	Pulse Range
1	0	0	0	66
2	0.0325	-2.15	0	86
3	0.024	-1.42	0	684
4	0.0258	-2.65	0	1495
5	0	36	0	32767

Table 1-3 : 60mL bottle

	Correlation value A	Correlation value B	Correlation value	Pulse Range
1	0	0	0	61
2	0.0375	-2.3	0	106
3	0.0404	-2.61	0	436
4	0.0464	-5.21	0	1407
5	0	60	0	32767

Table 1-4 : 120mL bottle

	Correlation value A	Correlation value B	Correlation value	Pulse Range
1	0	0	0	56
2	0.079	-4.4	0	238
3	0.103	-10.1	0	1312
4	0	125	0	32767
5	0	0	0	0

Table 1-5: 120mL (New) bottle

	Correlation value A	Correlation value B	Correlation value	Pulse Range
1	0	0	0	58
2	0.056	-3.2	0	125
3	0.097	-8.3	0	1375
4	0	125	0	32767
5	0	0	0	0

Figure 1. Enter Example (the case of 30mL bottle)
Change all text boxes inner this square as Table 1-1 to 1-5.

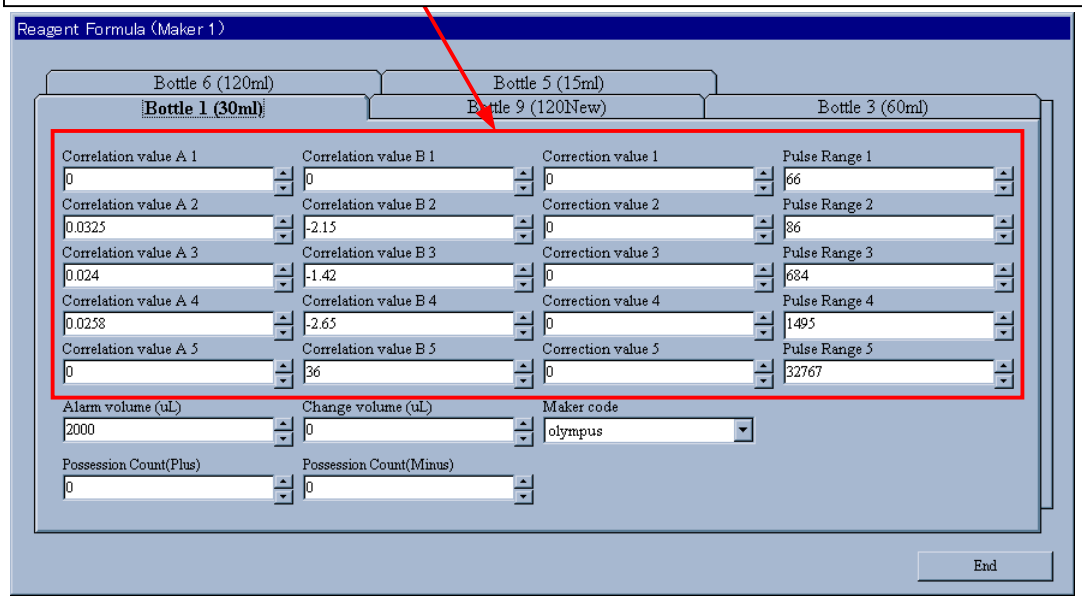
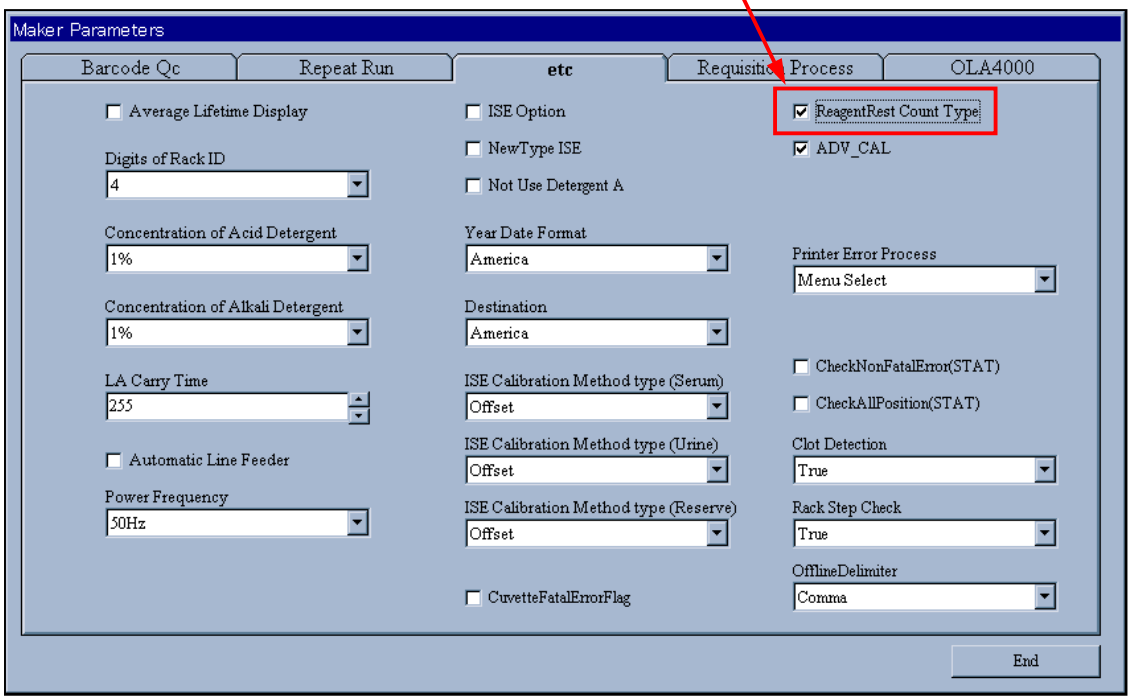


Figure 2. Check the ReagentRest Count Type

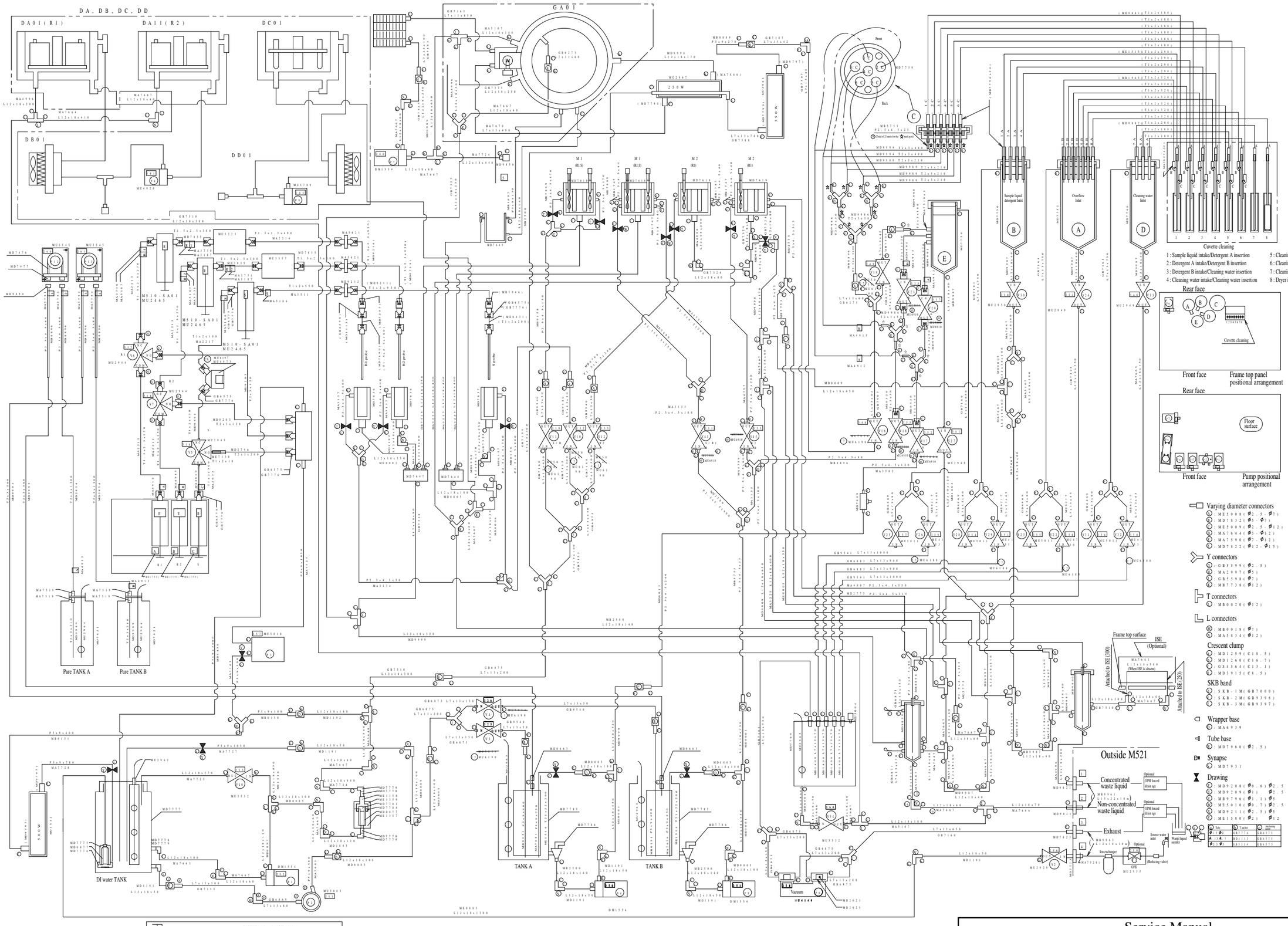


Unit	No.	Short name	ADD	Ds	LED
AA	C1	S counter	14	DS4	OOOO XOOO
AA	L1	CA disable LED			
AA	L2	STAT END LED			
AA	L3	STAT SET LED			
AA	P1	DI water pump	14	DS7	OXOO OOOO
AA	P2	Detergent dilution pump	14	DS8	XOOO OOOO
AA	P4	Detergent A pump	53	DS8	XOOO OOOO
AA	P5	Detergent B pump	53	DS7	OXOO OOOO
AA	P6	Vacuum pump	15	DS1	OOOO OOOX
AA	P7	GA circulation pump			
AA	P12	Pure detergent A pump	14	DS5	OOOX OOOO
AA	P13	Pure detergent B pump	14	DS6	OOXO OOOO
AA	S63	Vacuum tank full	0C	DS7	OXOO OOOO
AA	S64	Vacuum tank pressure SW	0C	DS8	XOOO OOOO
AA	S65	DI water (overflow)	0C	DS2	OOOO OOXO
AA	S66	DI water (upper)			
AA	S67	DI water (lower)			
AA	S68	DI water (empty)	0C	DS1	OOOO OOOX
AA	S69	Pure detergent A (empty)	0C	DS5	OOOX OOOO
AA	S70	Pure detergent B (empty)	0C	DS6	OOXO OOOO
AA	S71	Detergent A (overflow)	0D	DS4	OOOO XOOO
AA	S72	Detergent A (upper)	0D	DS3	OOOO OXOO
AA	S73	Detergent A (lower)	0D	DS2	OOOO OOXO
AA	S74	Detergent A (empty)	0D	DS1	OOOO OOOX
AA	S75	Detergent B (overflow)	0D	DS8	XOOO OOOO
AA	S76	Detergent B (upper)	0D	DS7	OXOO OOOO
AA	S77	Detergent B (lower)	0D	DS6	OOXO OOOO
AA	S78	Detergent B (empty)	0D	DS5	OOOX OOOO
AA	SW1	STAT SW	0A	DS4	OOOO XOOO
AA	SW2	DIAG SW	0A	DS1	OOOO OOOX
AA	V2	Water supply valve			
AA	V3	Detergent A dilution valve	10	DS3	OOOO OXOO
AA	V4	Detergent B dilution valve	10	DS4	OOOO XOOO
AA	V5	S inner wash valve	10	DS5	OOOX OOOO
AA	V6	R1 inner wash valve	10	DS6	OOXO OOOO
AA	V7	R2 inner wash valve	10	DS7	OXOO OOOO
AA	V10	Probe outer wash valve	10	DS8	XOOO OOOO
AA	V11	S/R1 M1 wash valve	11	DS1	OOOO OOOX
AA	V12	R2 M2 wash valve	11	DS6	OOXO OOOO
AA	V16	Wash water disp. valve	12	DS3	OOOO OXOO
AA	V17	Detergent A disp. valve	12	DS1	OOOO OOOX
AA	V18	Detergent B disp. valve	12	DS2	OOOO OOXO
AA	V19	Wash water drip valve	12	DS6	OOXO OOOO
AA	V20	Detergent A drip valve	12	DS4	OOOO XOOO
AA	V21	Detergent B drip valve	12	DS5	OOOX OOOO
AA	V22	OVF air release valve	12	DS8	XOOO OOOO
AA	V23	OVF asp. valve	13	DS3	OOOO OXOO
AA	V24	OVF drain valve	13	DS7	OXOO OOOO
AA	V25	Drip air release valve	13	DS2	OOOO OOXO
AA	V26	Drip asp. valve	13	DS4	OOOO XOOO

Unit	No.	Short name	ADD	Ds	LED
AA	V27	Liquid dripping drain valve	14	DS1	OOOO OOOX
AA	V28	Conc. waste air release valve	12	DS7	OXOO OOOO
AA	V29	Mixture asp. valve	14	DS2	OOOO OOXO
AA	V30	Mixture drain valve	13	DS6	OOXO OOOO
AA	V31	Aspiration air release valve	13	DS1	OOOO OOOX
AA	V32	Wash water asp. valve	13	DS5	OOOX OOOO
AA	V33	Aspiration drain valve	13	DS8	XOOO OOOO
AA	V34	Vacuum waste valve	14	DS3	OOOO OXOO
AA	V40	Air drive valve	15	DS8	XOOO OOOO
AA	V41	S/R1 M1detergent B valve	11	DS3	OOOO OXOO
AA	V45	R2 M2 detergent B valve	11	DS8	XOOO OOOO
CA	BCR1	BCR (Rack)			
CA	M1	CA rack feed	4C	DS7	OXOO OOOO
CA	S1	CA feed pitch	4C	DS4	OOOO XOOO
CA	S2	CA receptacle pitch	4C	DS3	OOOO OXOO
CA	S3	CA rack present	4C	DS5	OOOX OOOO
CA	S4	Rack type 1	4D	DS7	OXOO OOOO
CA	S5	Rack type 2	4D	DS6	OOXO OOOO
CA	S6	Rack type 3	4D	DS5	OOOX OOOO
CA	S91	LA rack arrival	4E	DS4	OOOO XOOO
CA	S92	LA manual rack set	4E	DS3	OOOO OXOO
CA	S93	LA rack pass	4E	DS1	OOOO OOOX
CA	S112	CA repeat run arrival	4C	DS2	OOOO OOXO
CB	BCR2	BCR (S)			
CB	M2	CB belt	4C	DS8	XOOO OOOO
CB	S7	CB rack detection	4C	DS6	OOXO OOOO
CB	S8	CB cup detection	4D	DS4	OOOO XOOO
CB	S16	Rack feed detection	4E	DS8	XOOO OOOO
CC	M6	CC rack send	51	DS8	XOOO OOOO
CC	M13	CC rack support			
CC	S100	CC cover open	51	DS6	OOXO OOOO
CC	S101	CC rack arrival	52	DS1	OOOO OOOX
CC	S102	CC pre-rack detection	51	DS2	OOOO OOXO
CC	S103	CC rack feed origin	51	DS4	OOOO XOOO
CC	S104	CC rack feed pos.	51	DS1	OOOO OOOX
CC	S105	CC shaft lower pos.	51	DS5	OOOX OOOO
CC	S106	CC rack push pos.	51	DS3	OOOO OXOO
CD	M7	CD rack send	51	DS7	OXOO OOOO
CD	S107		53	DS1	OOOO OOOX
CD	S109	CD retrieval pos.	53	DS3	OOOO OXOO
CD	S110	CD rack repeat pos.	53	DS2	OOOO OOXO
CD	S111	CD rack arrival detection	52	DS2	OOOO OOXO
CD	S113	CD repeat run rack pass	4C	DS1	OOOO OOOX
CD	S114	CD retrieval rack pass	52	DS3	OOOO OXOO
CE	M8	CE rack push	52	DS8	XOOO OOOO
CE	S24	CE rack wait pos.	52	DS4	OOOO XOOO
CE	S25	CE push Pos.	52	DS5	OOOX OOOO
CG	S11	ID pawl origin	50	DS1	OOOO OOOX
CG	S14	S pawl origin	50	DS2	OOOO OOXO
CG01	M4	ID pawl	50	DS7	OXOO OOOO
CG02	M5	S pawl	50	DS8	XOOO OOOO

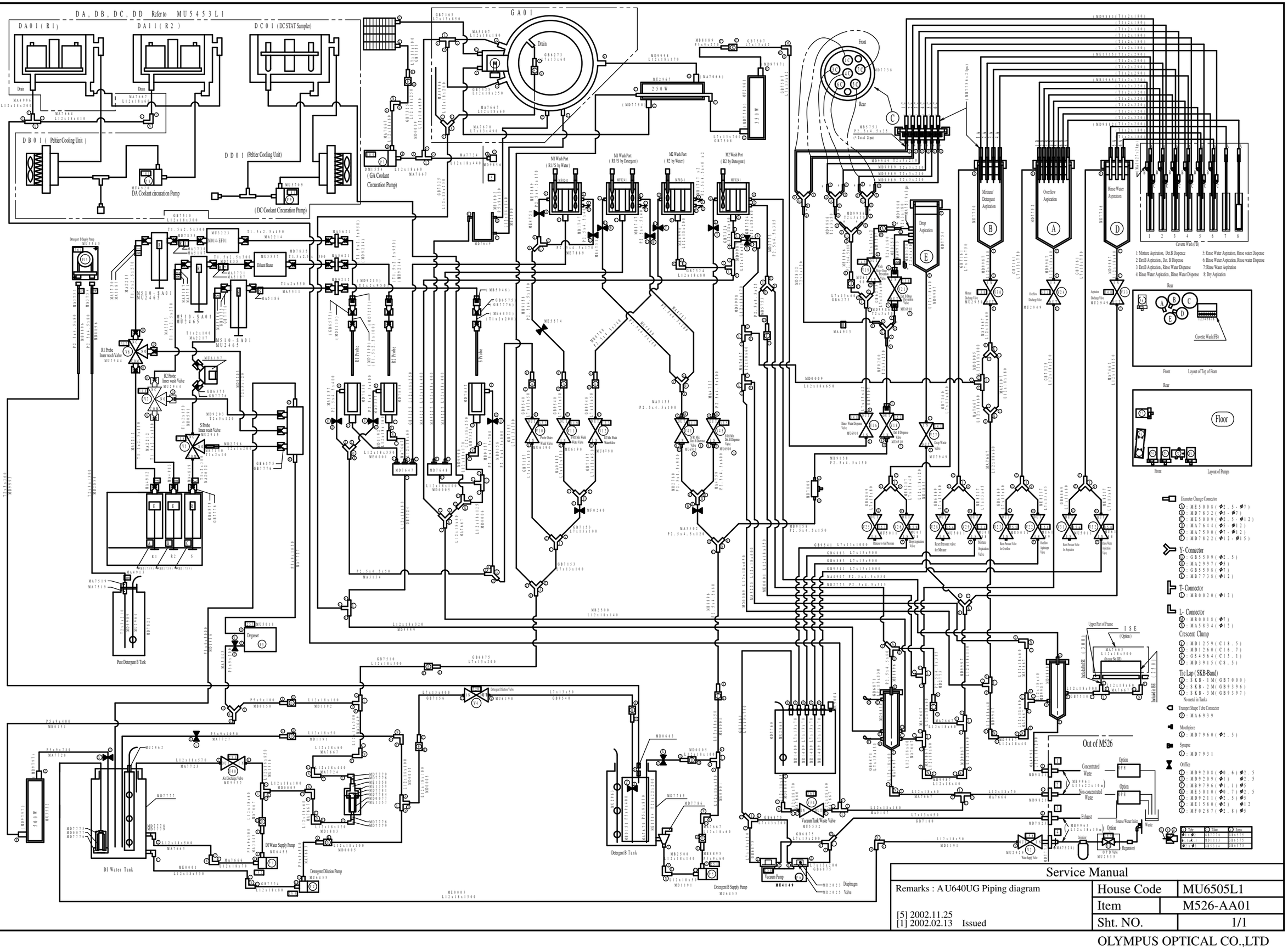
Unit	No.	Short name	ADD	Ds	LED
CH	S26	Rack full	52	DS6	OOXO OOOO
DA	BCR4	BCR (R1)			
DA	BCR5	BCR (R2)			
DA01	M16	R1 tray rot.	44	DS8	XOOO OOOO
DA01	S48	R1 tray rot. origin	44	DS1	OOOO OOOX
DA01	S49	R1 tray stop pos. (33)	44	DS2	OOOO OOXO
DA01	S50	R1 tray stop pos. (48)	44	DS3	OOOO OXOO
DA01	S51	R1 cover open	44	DS4	OOOO XOOO
DA01	S52	R1 bottle detection	44	DS5	OOOX OOOO
DA11	M28	R2 tray rot.	45	DS8	XOOO OOOO
DA11	S120	R2 tray rot. origin	45	DS1	OOOO OOOX
DA11	S121	R2 tray stop pos. (33)	45	DS2	OOOO OOXO
DA11	S122	R2 tray stop pos. (48)	45	DS3	OOOO OXOO
DA11	S123	R2 cover open	45	DS4	OOOO XOOO
DA11	S124	R2 bottle detection	45	DS5	OOOX OOOO
DB	P8	DA circulation pump			
DC	BCR3	BCR (STAT)			
DC	M9	STAT rot.	4F	DS7	OXOO OOOO
DC	S29	STAT rot. origin	4F	DS1	OOOO OOOX
DC	S30	STAT rot. stop pos.	4F	DS2	OOOO OOXO
DC	S31	STAT sample tube exist	4F	DS3	OOOO OXOO
DC	S32	STAT cover open	4F	DS4	OOOO XOOO
DD	P9	DC circulation pump			
EC	M34	Probe inner wash	58	DS8	XOOO OOOO
EC	S134	EC upper pos.	58	DS1	OOOO OOOX
EC	S135	EC lower pos.	58	DS2	OOOO OOXO
FA(R/L)	M10	S probe rot.	4A	DS8	XOOO OOOO
FA(R/L)	S33	S rot. origin	4A	DS5	OOOX OOOO
FA(R/L)	S34	S rot cuv pos.	4A	DS4	OOOO XOOO
FA(R/L)	S35	S rot. stop pos.	4A	DS6	OOXO OOOO
FA(U/D)	M11	S probe U/D	4A	DS7	OXOO OOOO
FA(U/D)	S36	S probe middle pos.	4B	DS1	OOOO OOOX
FA(U/D)	S37	S probe crash detection	4A	DS3	OOOO OXOO
FA(U/D)	S40	S liquid level detection	4A	DS2	OOOO OOXO
FA(U/D)	S42	Sample probe upper pos.	4A	DS1	OOOO OOOX
FB	M22	Cuv wash U/D	46	DS7	OXOO OOOO
FB	S61	FB upper pos.	46	DS1	OOOO OOOX
FB	S62	FB down detection	46	DS2	OOOO OOXO
FC01(MIX)	M21	M1 mix	58	DS7	OXOO OOOO
FC01(R/L)	M19	M1 rot.	57	DS8	XOOO OOOO
FC01(R/L)	S58	M1 rot. origin	57	DS5	OOOX OOOO
FC01(R/L)	S59	M1 rot. stop pos.	57	DS6	OOXO OOOO
FC01(U/D)	M20	M1 U/D	57	DS7	OXOO OOOO
FC01(U/D)	S60	M1 upper pos.	57	DS1	OOOO OOOX
FC11(MIX)	M32	M2 mix	49	DS7	OXOO OOOO
FC11(R/L)	M30	M2 rot.	48	DS8	XOOO OOOO
FC11(R/L)	S130	M2 rot. origin	48	DS5	OOOX OOOO
FC11(R/L)	S131	M2 rot. stop pos.	48	DS6	OOXO OOOO
FC11(U/D)	M31	M2 U/D	48	DS7	OXOO OOOO
FC11(U/D)	S132	M2 upper pos.	48	DS1	OOOO OOOX

Unit	No.	Short name	ADD	Ds	LED
FD01(R/L)	M14	R1 probe rot.	47	DS8	XOOO OOOO
FD01(R/L)	S43	R1 probe rot. origin	47	DS5	OOOX OOOO
FD01(R/L)	S44	R1 probe rot. cuv pos.	47	DS6	OOXO OOOO
FD01(R/L)	S45	R1 probe rot. stop pos.	47	DS4	OOOO XOOO
FD01(U/D)	M15	R1 probe U/D	47	DS7	OXOO OOOO
FD01(U/D)	S46	R1 probe upper pos.	47	DS1	OOOO OOOX
FD01(U/D)	S47	R1 probe crash detection	47	DS3	OOOO OXOO
FD01(U/D)	S55	R1 liquid level detection	47	DS2	OOOO OOXO
FD11(R/L)	M26	R2 probe rot.	59	DS8	XOOO OOOO
FD11(R/L)	S115	R2 probe rot. origin	59	DS5	OOOX OOOO
FD11(R/L)	S116	R2 probe rot. cuv pos.	59	DS6	OOXO OOOO
FD11(R/L)	S117	R2 probe rot. stop pos.	59	DS4	OOOO XOOO
FD11(U/D)	M27	R2 probe U/D	59	DS7	OXOO OOOO
FD11(U/D)	S118	R2 probe upper pos.	59	DS1	OOOO OOOX
FD11(U/D)	S119	R2 probe crash detection	59	DS3	OOOO OXOO
FD11(U/D)	S127	R2 liquid level detection	59	DS2	OOOO OOXO
GA	M18	Cuv rot.	40	DS3	OOOO OXOO
GA	S56	Cuv wheel origin	43	DS1	OOOO OOOX
GA	S57	Cuv wheel stop pos.	43	DS2	OOOO OOXO
HA	P3	Degassor	15	DS2	OOOO OOXO
ISE	M23	ISE B disp.			
ISE	M24	ISE mix			
ISE	S86	ISE B empty	0E	DS3	OOOO OXOO
ISE	S87	ISE MID empty	0E	DS2	OOOO OOXO
ISE	S88	ISE REF empty	0E	DS1	OOOO OOOX
ISE	V35	ISE flowcell valve			
ISE	V36	ISE REF valve			
ISE	V37	ISE B valve			
OPD	V1	OPD			
OPH	P10	OPH1			
OPH	P11	OPH2			
OPH	S79	OPH1 full	0C	DS4	OOOO XOOO
OPH	S81	OPH2 full	0C	DS3	OOOO OXOO
SA	M12	S disp.	55	DS4	OOOO XOOO
SA	M17	R1 disp.	54	DS4	OOOO XOOO
SA	M29	R2 disp.	54	DS8	XOOO OOOO
SA	S125	R2 disp. upper pos.	54	DS5	OOOX OOOO
SA	S126	R2 disp. lower pos.	54	DS6	OOXO OOOO
SA	S38	S disp. upper pos.	55	DS1	OOOO OOOX
SA	S39	S disp. lower pos.	55	DS2	OOOO OOXO
SA	S41	S clog detection	56	DS1	OOOO OOOX
SA	S53	R1 disp. upper pos.	54	DS1	OOOO OOOX
SA	S54	R1 disp. lower pos.	54	DS2	OOOO OOXO
SA	S83	ISE B disp. upper pos.			
SA	S84	ISE B disp. lower pos.			



Service Manual		
Remarks : Piping diagram	House Code	MU5444L1
[28] 1999.08.25 [27] 1999.07.10 [21] 1999.02.10 [19] 1998.12.10 [3] 1998.07.31 Issued [45] 2002.11.25 ECN521-164 [36] 2001.10.10 ECN521-124	Item	M521-AA01
	Sht. NO.	1/1

OLYMPUS OPTICAL CO.,LTD



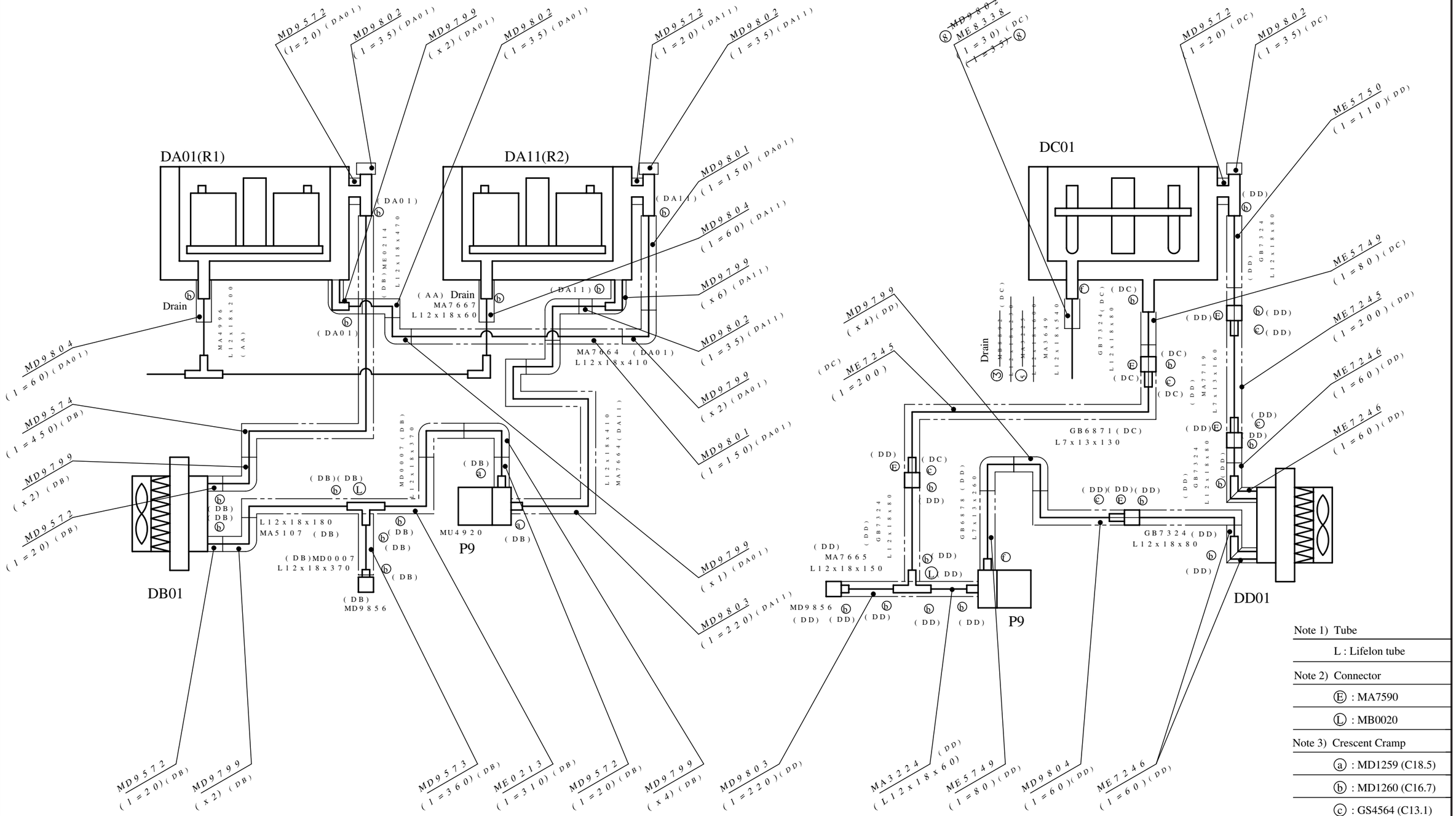
Service Manual

Remarks : A U640UG Piping diagram

[5] 2002.11.25
[1] 2002.02.13 Issued

House Code	MU6505L1
Item	M526-AA01
Sht. NO.	1/1

OLYMPUS OPTICAL CO.,LTD



Note 1) Tube

L : Lifelon tube

Note 2) Connector

Ⓔ : MA7590

Ⓛ : MB0020

Note 3) Crescent Cramp

ⓐ : MD1259 (C18.5)

ⓑ : MD1260 (C16.7)

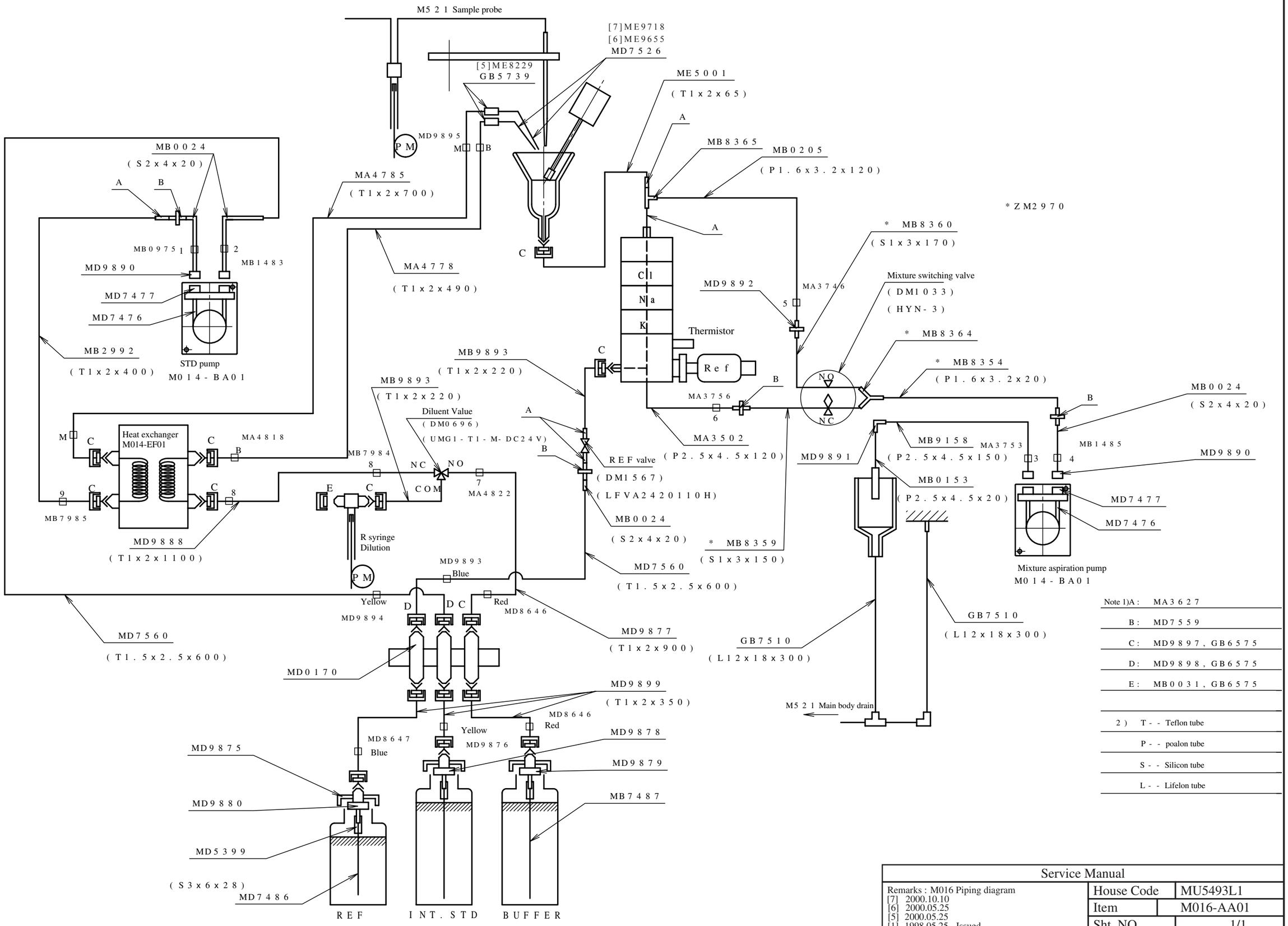
ⓒ : GS4564 (C13.1)

Note 4) S K B Band

ⓕ : GB9397 (3M)

Service Manual		
Remarks : M521 Peltier cooler [8] 1999.03.25 [5] 1998.12.10 [3] 1998.08.20 [2] 1998.07.31 Issued	House Code	MU5453L1
	Item	M521-DD01
	Sht. NO.	1/1

OLYMPUS OPTICAL CO.,LTD



Note 1)A : MA3627

B : MD7559

C : MD9897, GB6575

D : MD9898, GB6575

E : MB0031, GB6575

2) T - - Teflon tube

P - - poalon tube

S - - Silicon tube

L - - Lifelon tube

Service Manual		
Remarks : M016 Piping diagram [7] 2000.10.10 [6] 2000.05.25 [5] 2000.05.25 [1] 1998.05.25 Issued	House Code	MU5493L1
	Item	M016-AA01
	Sht. NO.	1/1

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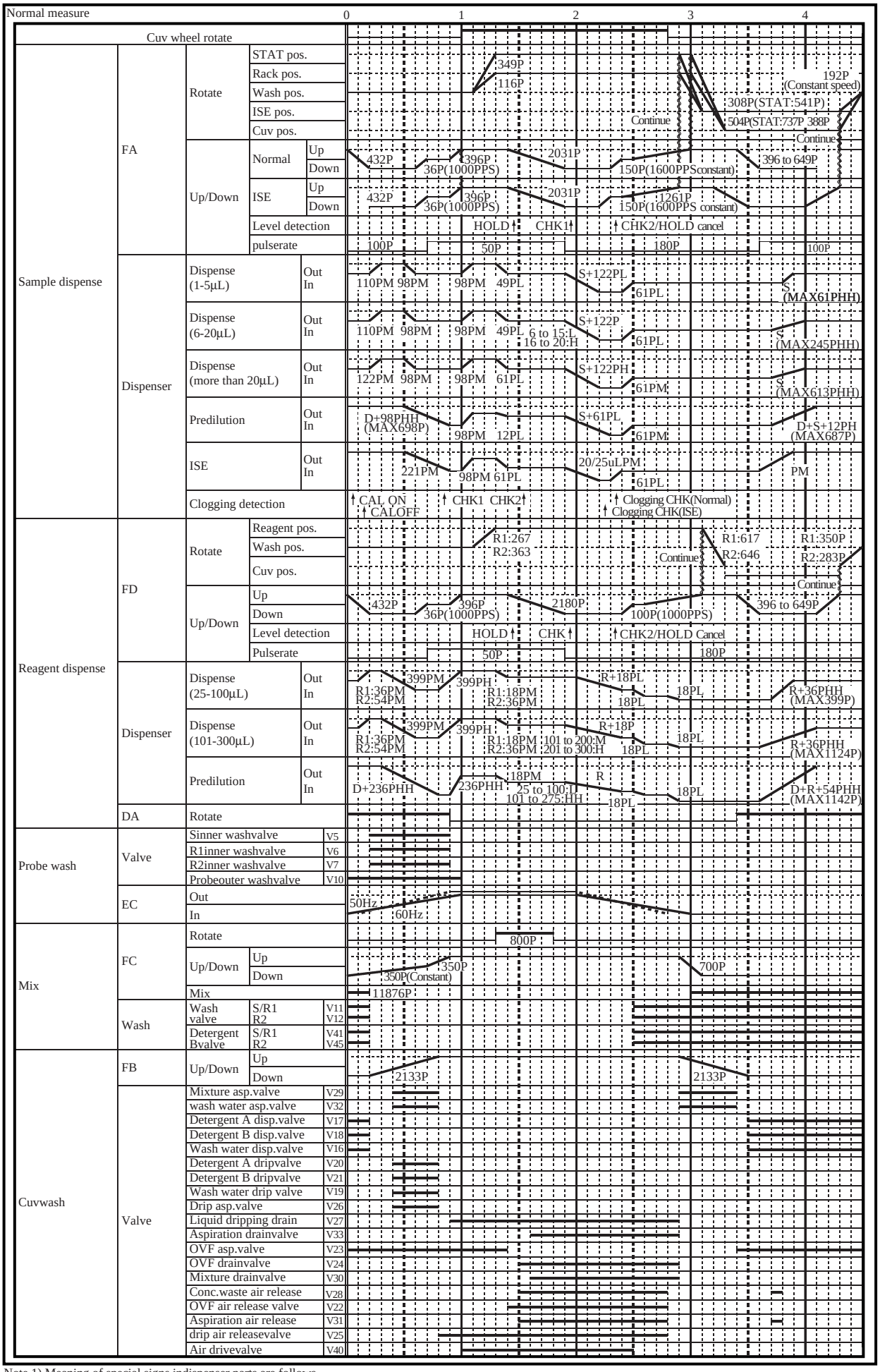
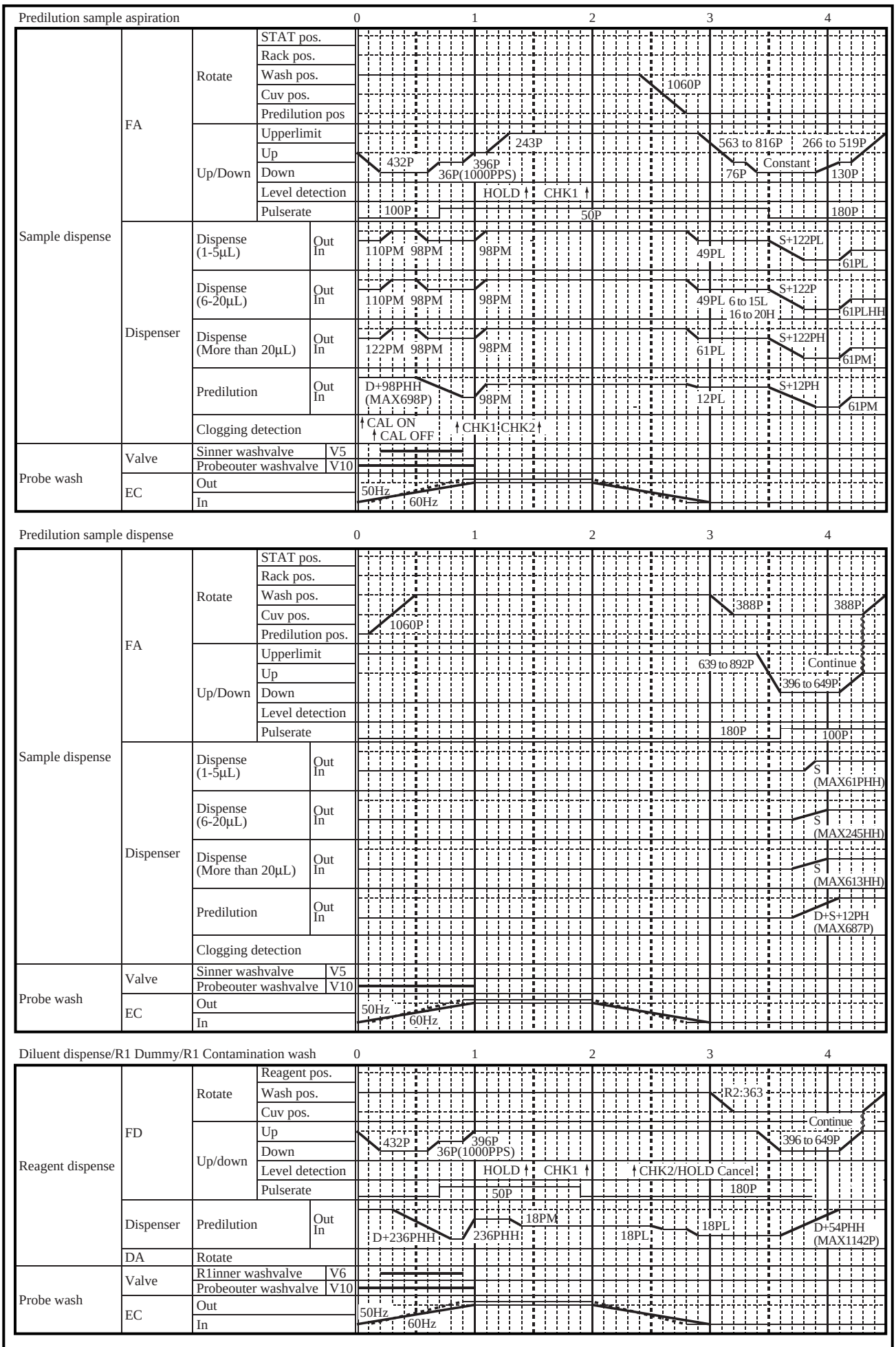
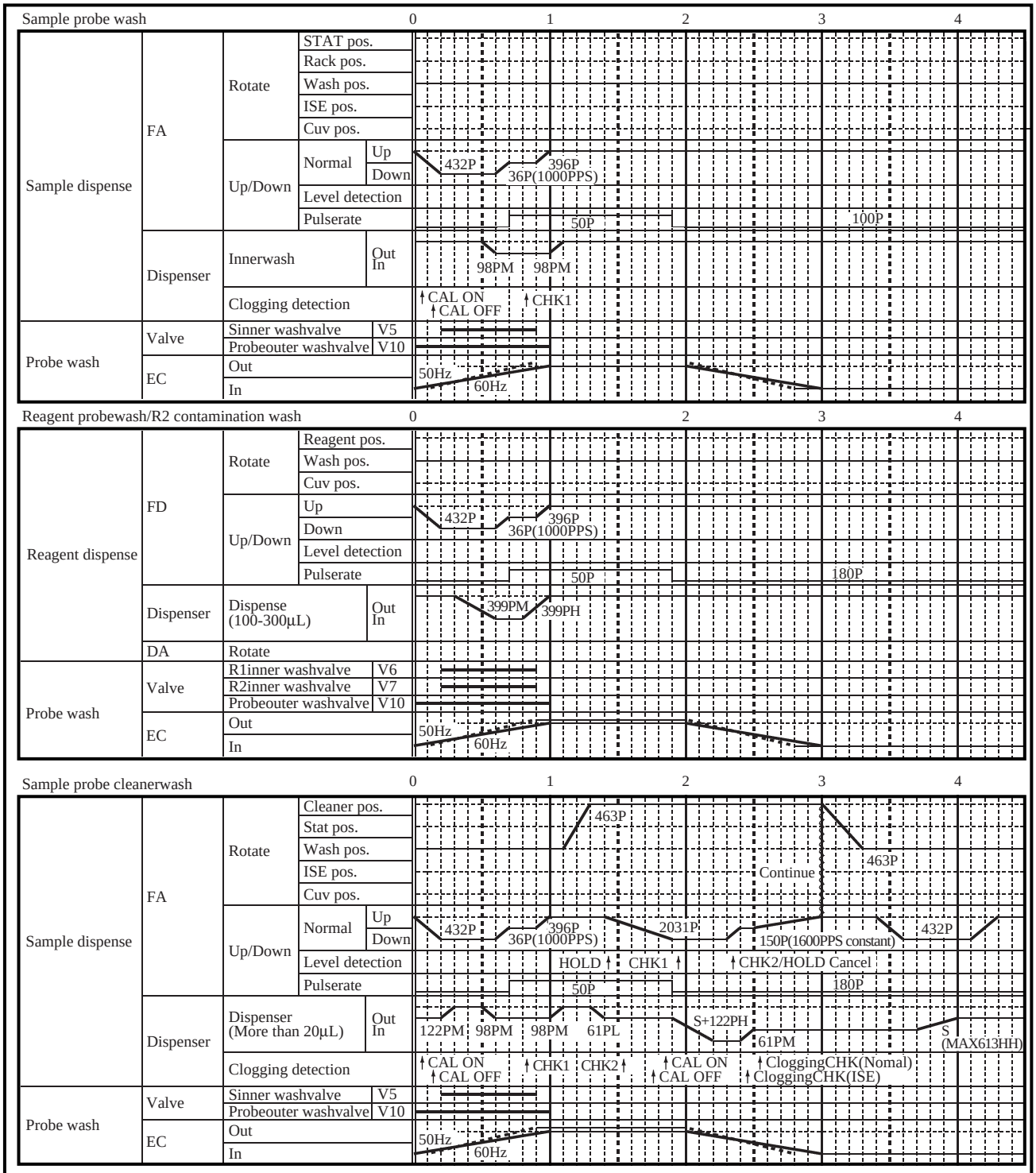


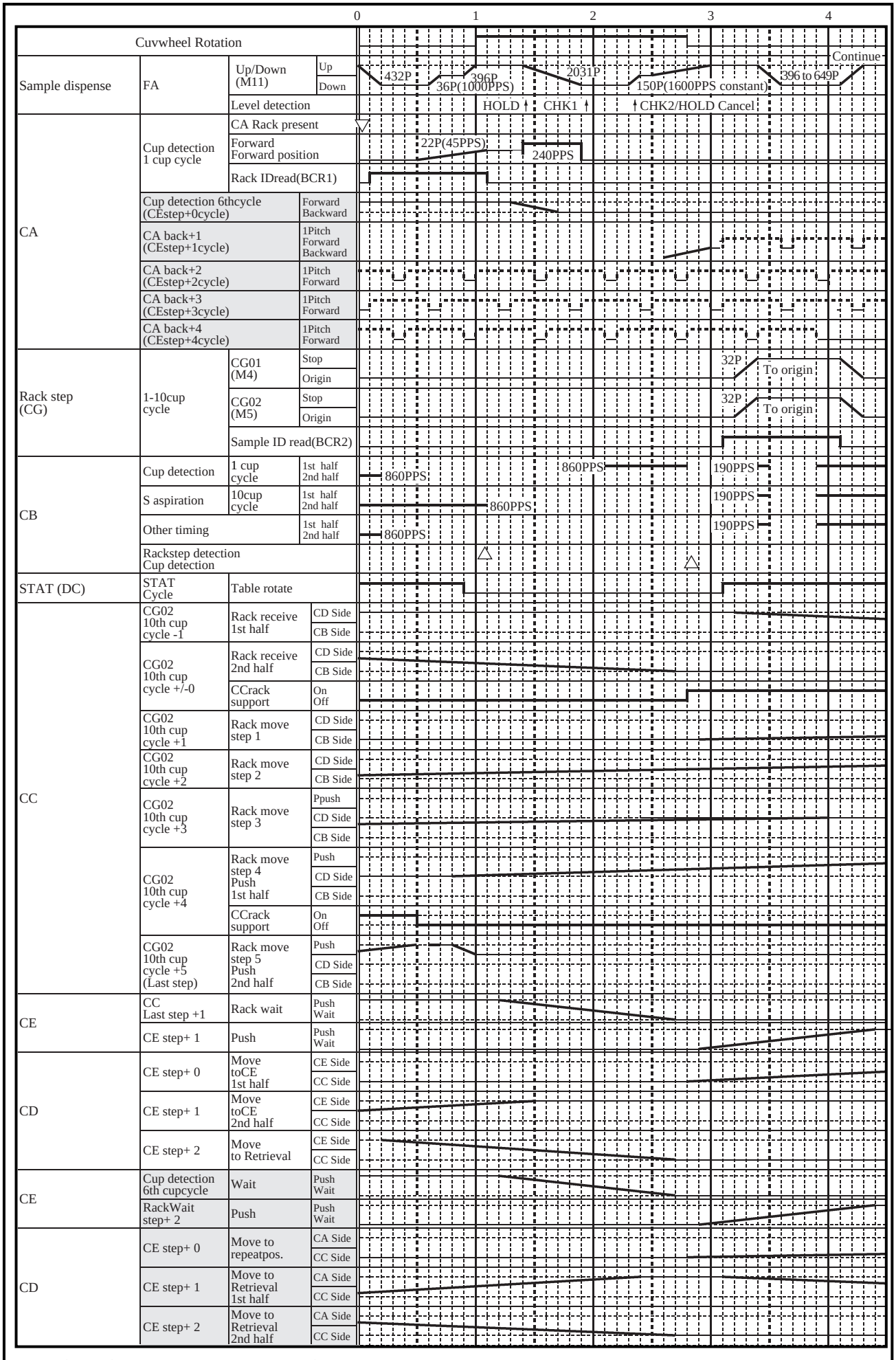
Note 1) Meaning of special signs indispenser parts are follows.
L: 1000pps H: 2000pps M: 1500pps HH: 2500pps

Note 2) Meaning of signs in level detection parts are follows.
HOLD/HOLD cancel: Offset adjustment of Level detection signal, CHK1: Level detection during downward, CHK2: Level detection after sample aspiration

Note 3) Meaning of signs in clogging detection parts are follows.
CAL/CALOFF: Calibration of Clogging detection, CHK1: Positive pressure ON check during innerwash, CHK2: Positive pressure OFF check
Clogging CHK: Check not Clogging detection ON after sample aspiration.

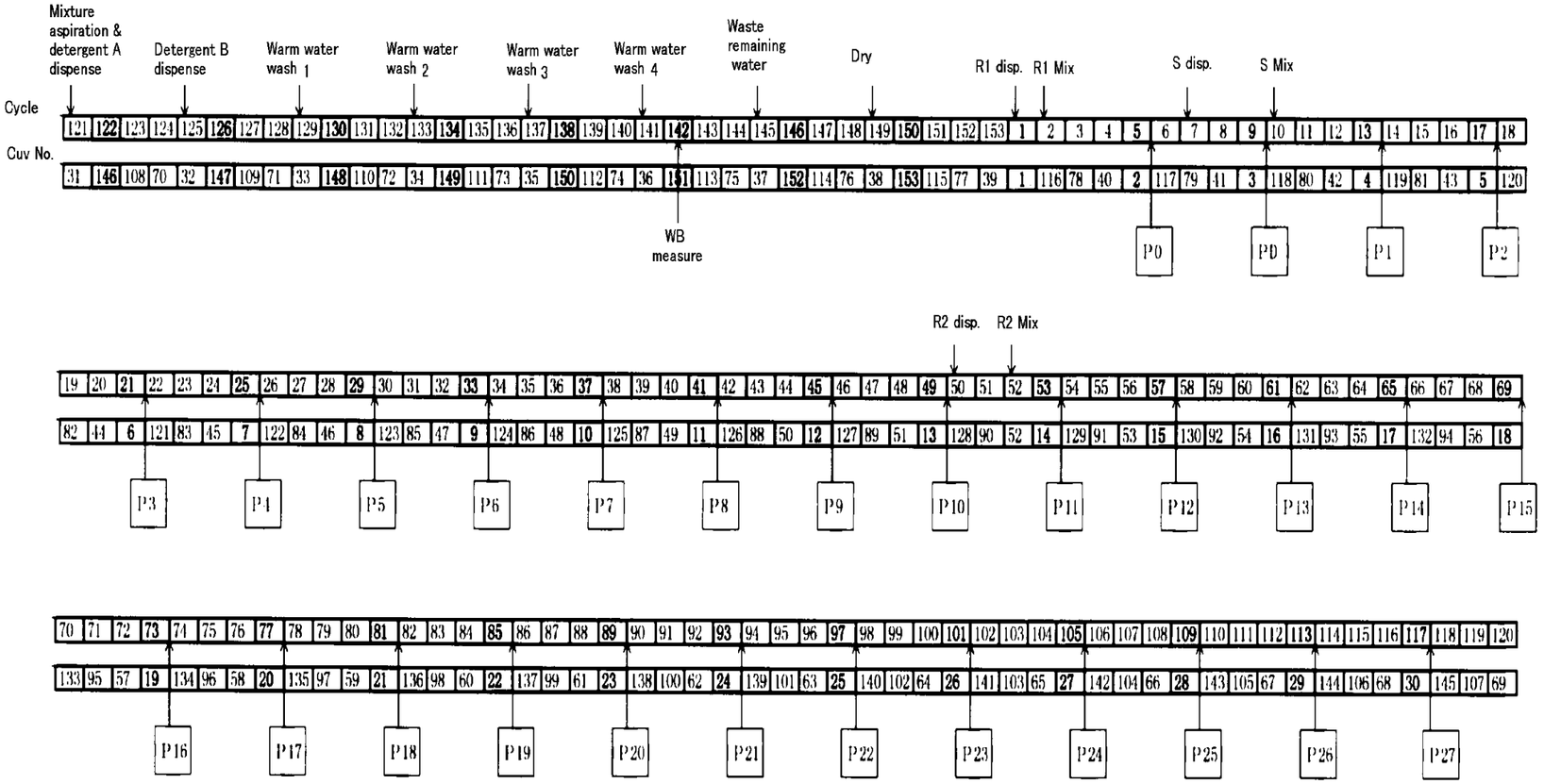

Predilution sample aspiration
0
1
2
3
4
Sample dispense
FA
Rotate
STAT pos.
Rack pos.
Wash pos.
Cuv pos.
Predilution pos
1060P
Up/Down
Upperlimit
Up
Down
Level detection
Pulserate
243P
432P
396P
36P(1000PPS)
563 to 816P
266 to 519P
Constant
76P
130P
HOLD
CHK1
100P
50P
180P
Dispenser
Dispense (1-5µL)
Out
In
110PM 98PM
98PM
49PL
S+122PL
61PL
Dispense (6-20µL)
110PM 98PM
98PM
49PL 6 to 15L
16 to 20H
S+122P
61PLHH
Dispense (More than 20µL)
122PM 98PM
98PM
61PL
S+122PH
61PM
Predilution
D+98PHH (MAX698P)
98PM
12PL
S+12PH
61PM
Clogging detection
CAL ON
CAL OFF
CHK1 CHK2
Probe wash
Valve
Sinner washvalve
V5
Probeouter washvalve
V10
EC
Out
In
50Hz
60Hz
Predilution sample dispense
0
1
2
3
4
Sample dispense
FA
Rotate
STAT pos.
Rack pos.
Wash pos.
Cuv pos.
Predilution pos.
1060P
388P
388P
Up/Down
Upperlimit
Up
Down
Level detection
Pulserate
639 to 892P
Continue
396 to 649P
180P
100P
Dispenser
Dispense (1-5µL)
Out
In
S
(MAX61PHH)
Dispense (6-20µL)
S
(MAX245HH)
Dispense (More than 20µL)
S
(MAX613HH)
Predilution
D+S+12PH
(MAX687P)
Clogging detection
Probe wash
Valve
Sinner washvalve
V5
Probeouter washvalve
V10
EC
Out
In
50Hz
60Hz
Diluent dispense/R1 Dummy/R1 Contamination wash
0
1
2
3
4
Reagent dispense
FD
Rotate
Reagent pos.
Wash pos.
Cuv pos.
R2:363
Up/down
Up
Down
Level detection
Pulserate
Continue
396 to 649P
432P
396P
36P(1000PPS)
HOLD
CHK1
CHK2/HOLD Cancel
50P
180P
Dispenser
Predilution
Out
In
D+236PHH
236PHH
18PM
18PL
18PL
D+54PHH
(MAX1142P)
DA
Rotate
Probe wash
Valve
R1inner washvalve
V6
Probeouter washvalve
V10
EC
Out
In
50Hz
60Hz


Sample probe wash
0
1
2
3
4
Sample dispense
FA
Rotate
STAT pos.
Rack pos.
Wash pos.
ISE pos.
Cuv pos.
Up/Down
Normal
Up
Down
Level detection
Pulserate
Dispenser
Innerwash
Out
In
Clogging detection
Probe wash
Valve
Sinner washvalve
V5
Probeouter washvalve
V10
EC
Out
In
432P
396P
36P(1000PPS)
50P
100P
98PM
98PM
CAL ON
CAL OFF
CHK1
50Hz
60Hz
Reagent probewash/R2 contamination wash
Reagent dispense
FD
Reagent pos.
Wash pos.
Cuv pos.
Level detection
180P
Dispense
(100-300µL)
399PM
399PH
DA
Rotate
R1inner washvalve
V6
R2inner washvalve
V7
Sample probe cleanerwash
Cleaner pos.
Stat pos.
463P
Continue
2031P
150P(1600PPS constant)
HOLD
CHK1
CHK2/HOLD Cancel
Dispenser
(More than 20µL)
122PM
98PM
98PM
61PL
S+122PH
61PM
S
(MAX613HH)
CHK1
CHK2
CAL ON
CAL OFF
CloggingCHK(Nomal)
CloggingCHK(ISE)

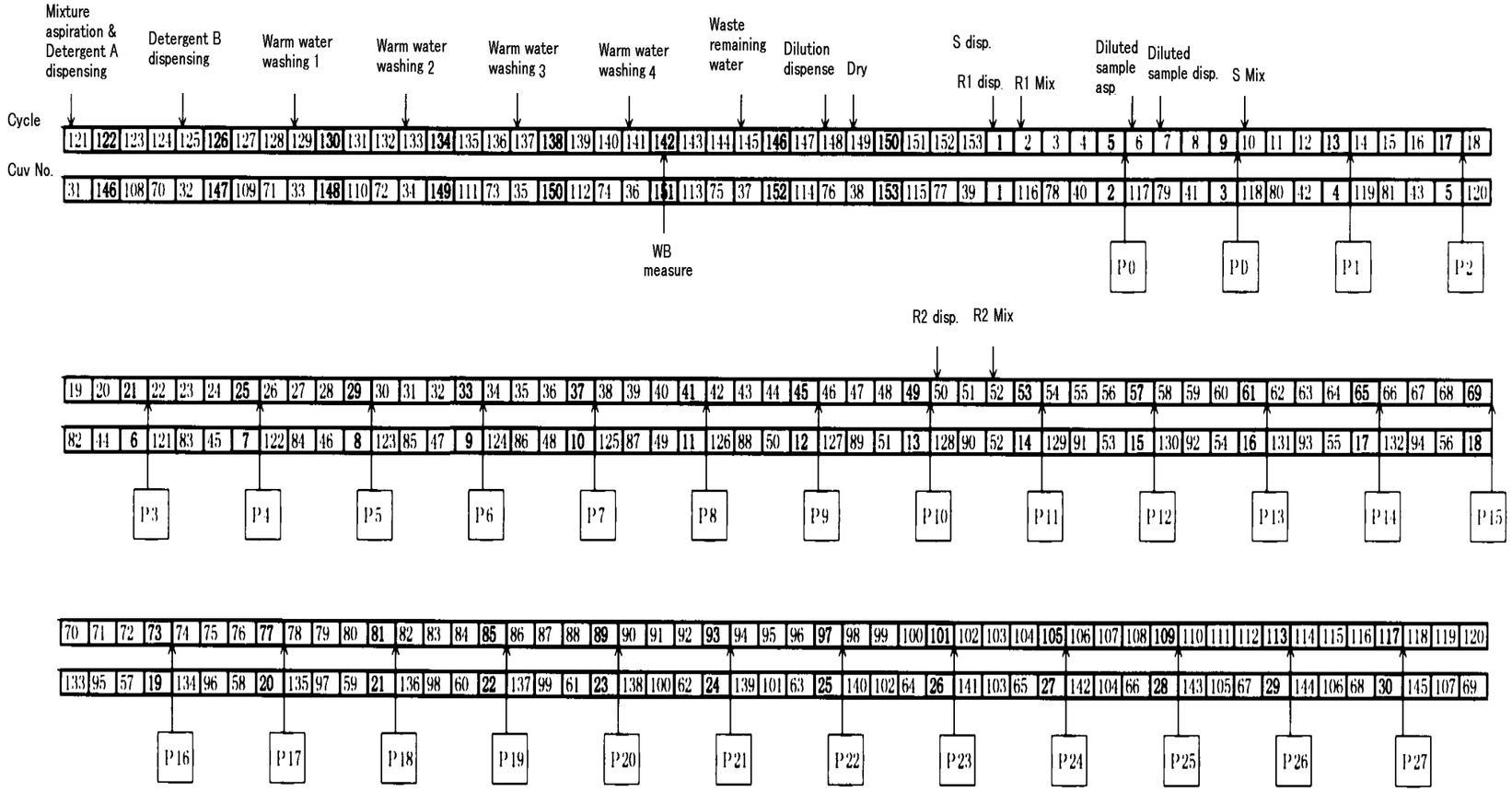


Note 1) After CA forward, when Rack is detected, CA forward is stopped even less than 23 steps. (Step count table is canceled.)
2) CC can return to CB side after 400ms from CD is started for CE or CA.
3) CC can not move to CD side if CD is not at origin position. CG 02 can not move to 10th cup position if CC is not at origin position.
4) If rack is existing at cup detection part, CA rack detection(S7) is off after CG 016th step.
5) CA caterpillar back movement is started with the timing of CE move to wait position.
6) If CD start timing and CG 0210th step are same timing, the both movement are performed.
7) In case CA caterpillar is performing backward for repeat run, rack presence check is not done at rack type check position.

Reaction time chart (Normal dispense)



Reaction time chart (Predilution)



■ 18digits format

● Barcode symbol

Interleaved Two of Five (ITF)

● Check digit

Modula 10 / 3 wait

● Format

Digit	Code information	Value range	Remarks
1 - 3	Test code	001 - 999	
4	Bottle type	1 – 9	1: 30ml 2: (judged as 15ml) 3: 60ml 4: (judged as 60ml) 5: 15ml 6: 120ml 7: 180ml 8: 300ml 9: Large 3
5	Reagent type	1 – 4	1: R1 2-4: R2
6 - 7	Expiry date (Month)	1 – 12	
8 - 9	Expiry date (year)	96 –	
10 - 13	Lot No.	0000 – 9999	
14 - 17	Bottle No.	0000 – 9999	
18	Check digit	0 – 9	

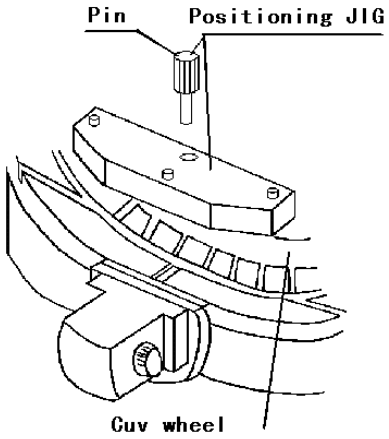
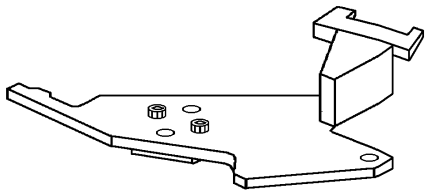
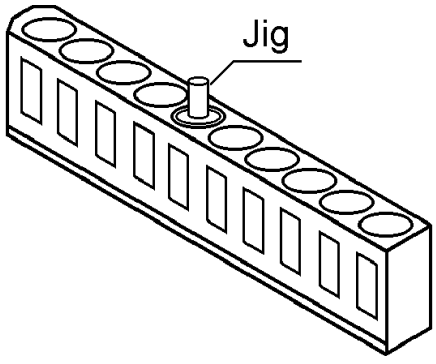
■ 20digits format

[!] Instruction

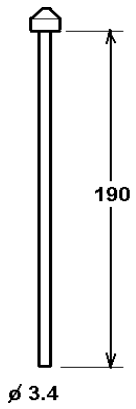
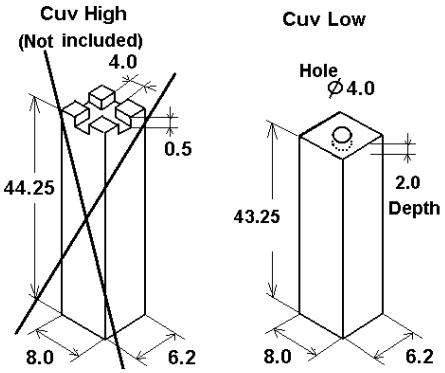
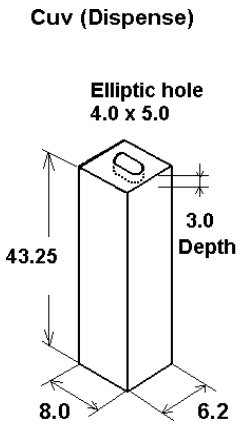
20digits barcode label can be available when using the software version 5.00 and newer.

Digit	Code information	Value range	Remarks
1 - 3	Test code	001 - 999	
4 - 5	Bottle type	01 – 09	1: 30ml 2: (judged as 15ml) 3: 60ml 4: (judged as 60ml) 5: 15ml 6: 120ml 7: 180ml 8: 300ml 9: Large 3
6	Reagent type	1 – 4	1: R1 2-4: R2
7 - 8	Expiry date (Month)	1 – 12	
9 - 10	Expiry date (year)	96 –	
11 - 14	Lot No.	0000 – 9999	
15 - 19	Bottle No.	00000 – 35999	
20	Check digit	0 – 9	

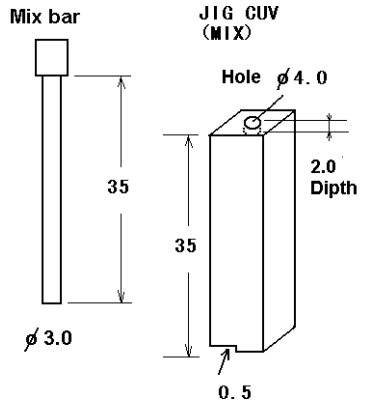
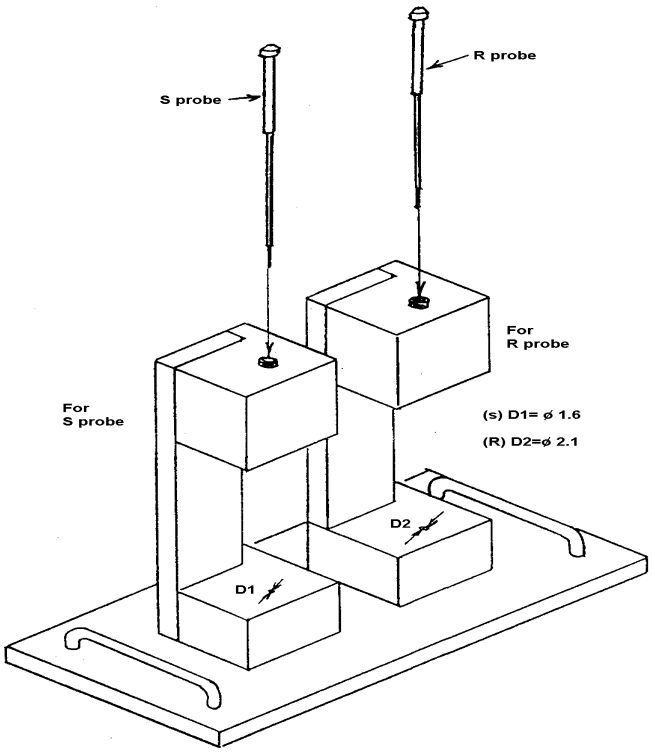
■ JIG list

Unit	Part No.	Description	Contents
GA	KCM0314	GA light guide alignment jig (JC08-M520-GA01-MD7194)	Pin + Positioning jig 
GA	KCM0315	PDA (Photo Diode array) positioning jig (JC14-M520-GA01-MV1006)	
CB	KCM0316	Cup detection sensor adjustment jig (JC12-M520-AA01-MU5103)	

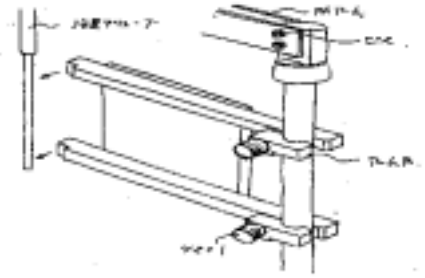
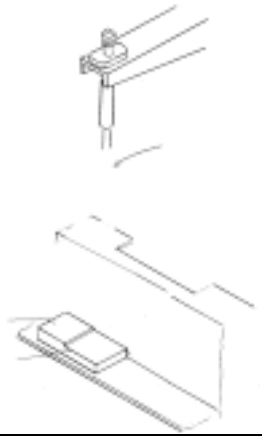
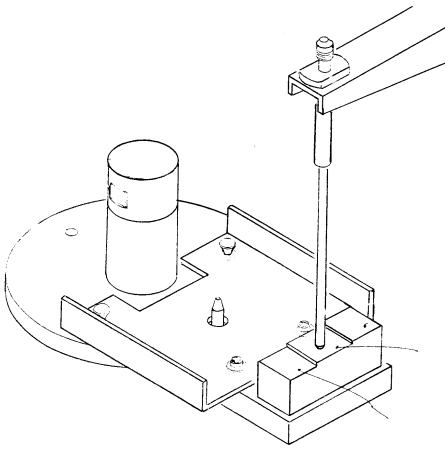
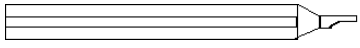
■ JIG list

Unit	Part No.	Description	Contents
FA FD	KCM0317	Jig probe (JC10-M520-FA01-MD7414(probe)) 190 x ϕ 3.4 (Caution) At customer site, You check each position by actual probe (New one should be used). If the position is out of target by actual probe, check it with Jig probe because the actual probe is bent. Final adjustment should be done by jig probe.	
GA	KCM0318	Jig Cuv High/ Low (JC06-M520-AA01-MU3165(Block3)) （Jig Cuv High） Not included. （ Jig Cuv Low） For S/R dispensing probe positions	
GA	KCM0319	Jig Cuv Dispense (JC04-M521-AA01-MA7518) Elliptic hole 4.0 x 5.0 Depth 3.0 For S probe pre-dilution position	

■ JIG list

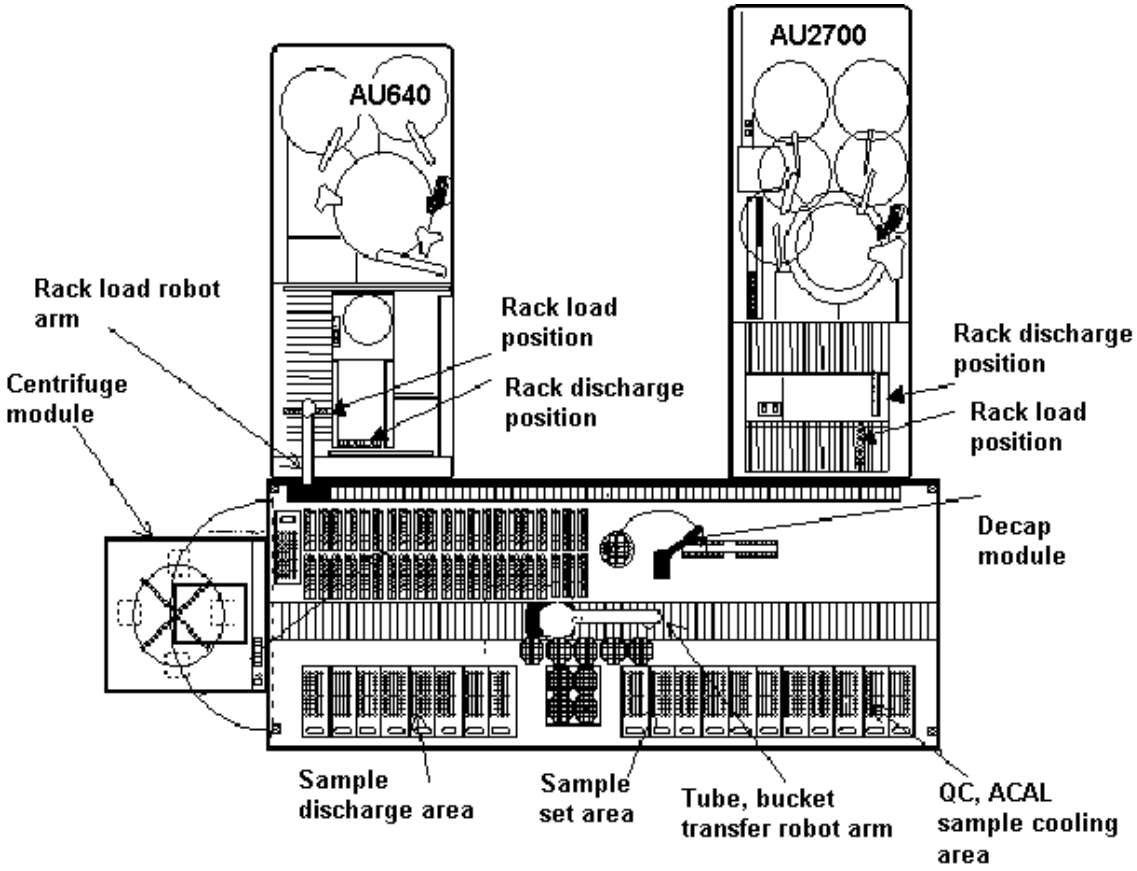
Unit	Part No.	Description	Contents
FC	KCM0320	Jig mix bar set (JC05-M520-FC01-MD7411) Adjust horizontal position by upper hole, Adjust height by lower 0.5mm gap.	
FA FD	KCM0321	Probe straight check (JC10-M520-AA01-ME2357) 	

■ JIG list

Unit	Part No.	Description	Contents
FA	KCM0322	Probe Verticality Jig (JC01-M521-FA01-MD7147) ECN521-132	
FD	KCM0812	Probe Verticality Jig (JC09-M520-FA01-JC10) ECN521-132	Similar with KCM0322
FA	KCM0323	FA Sample Dead volume Jig (For factory) (JC04-M520-AA01-MA7414)	Use KCM0805 for Field service.
FA	KCM0805	FA Sample Dead volume Jig (common with AU2700) <u>Target of FA Height 8.3mm from Belt</u> Jig probe 190mm Jig Block Upper limit 8.5 +/-0.02 mm Lower limit 8.0 +/-0.02 mm	
FD	KCM0806	FD Reagent Dead volume Jig (common with AU2700) (JC03-M520-AA01-MA7147) ECN521-132 <u>Target of FD Height 3mm from R tray</u> Jig probe 150mm (Normal Probe 190mm) Jig Block Upper limit 11.15 +0/-0.05mm Middle 10.95 +/-0.05mm Lower limit 10.75 +0.05/-0mm	
	KCM0324	Elco pin remover For Elco pin (Green Housing)	

■ Outline of OPG01

- The OPG01 is a connection kit when you attach OLA4000 work cell that is produced in ODC market.

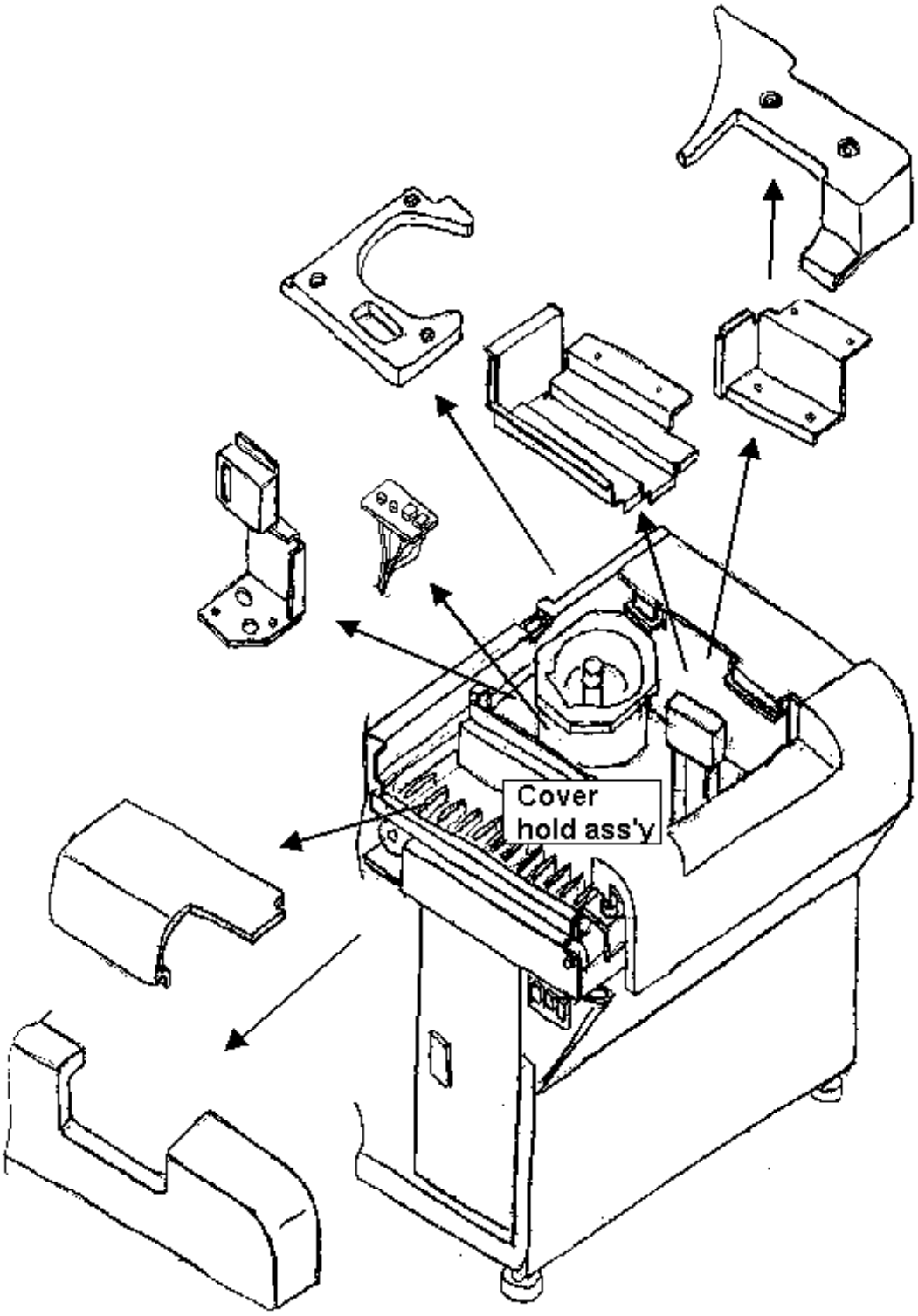


■ Contents of OPG01

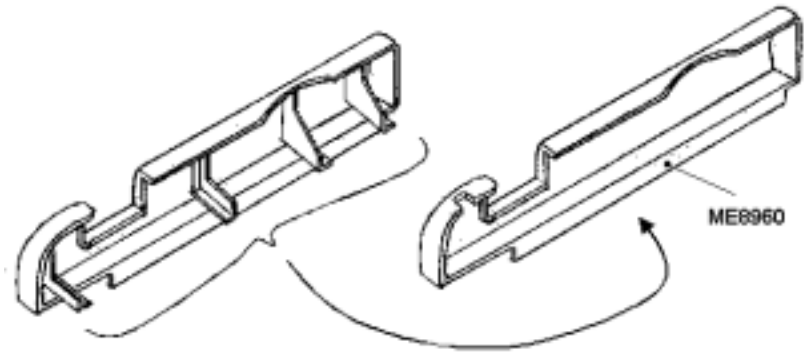
- Cover hold ass'y (Added 2 sensors for rack presence on cover hold.)
  - Sensor for rack load position by OLA4000 (4th position from the right end of CA)
  - Sensor for manual rack set position (16th position from the right end of CA)
- CA cover (ME8961) (The CA upper cover is shorten for input rack by robot arm.)
- Cover F (ME8960) (The Front cover has additional cut for input rack by robot arm.)

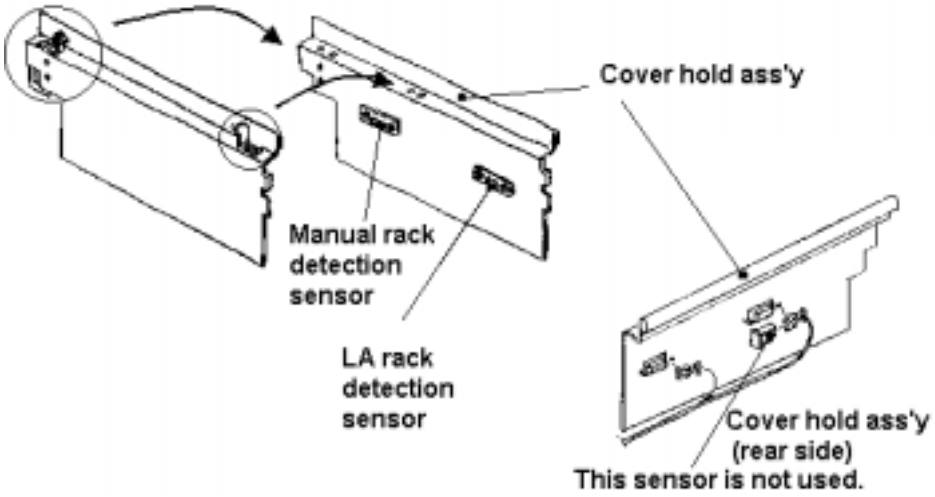
■ Set up of OPG01 on AU640

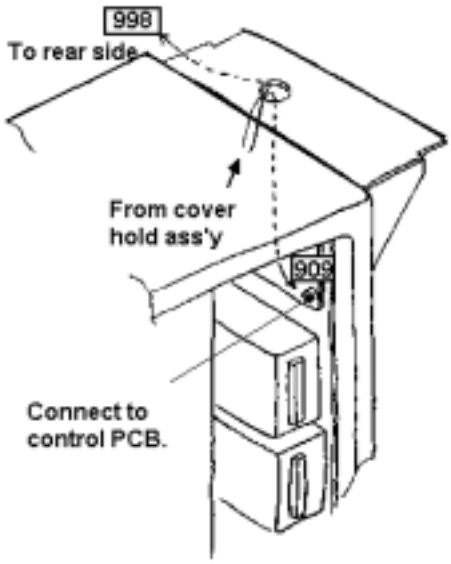
(1) Remove covers Diag switch panel and bar code reader ass'y.
In the last, remove cover hold ass'y.



(2) Replace cover hold ass'y and cover F.

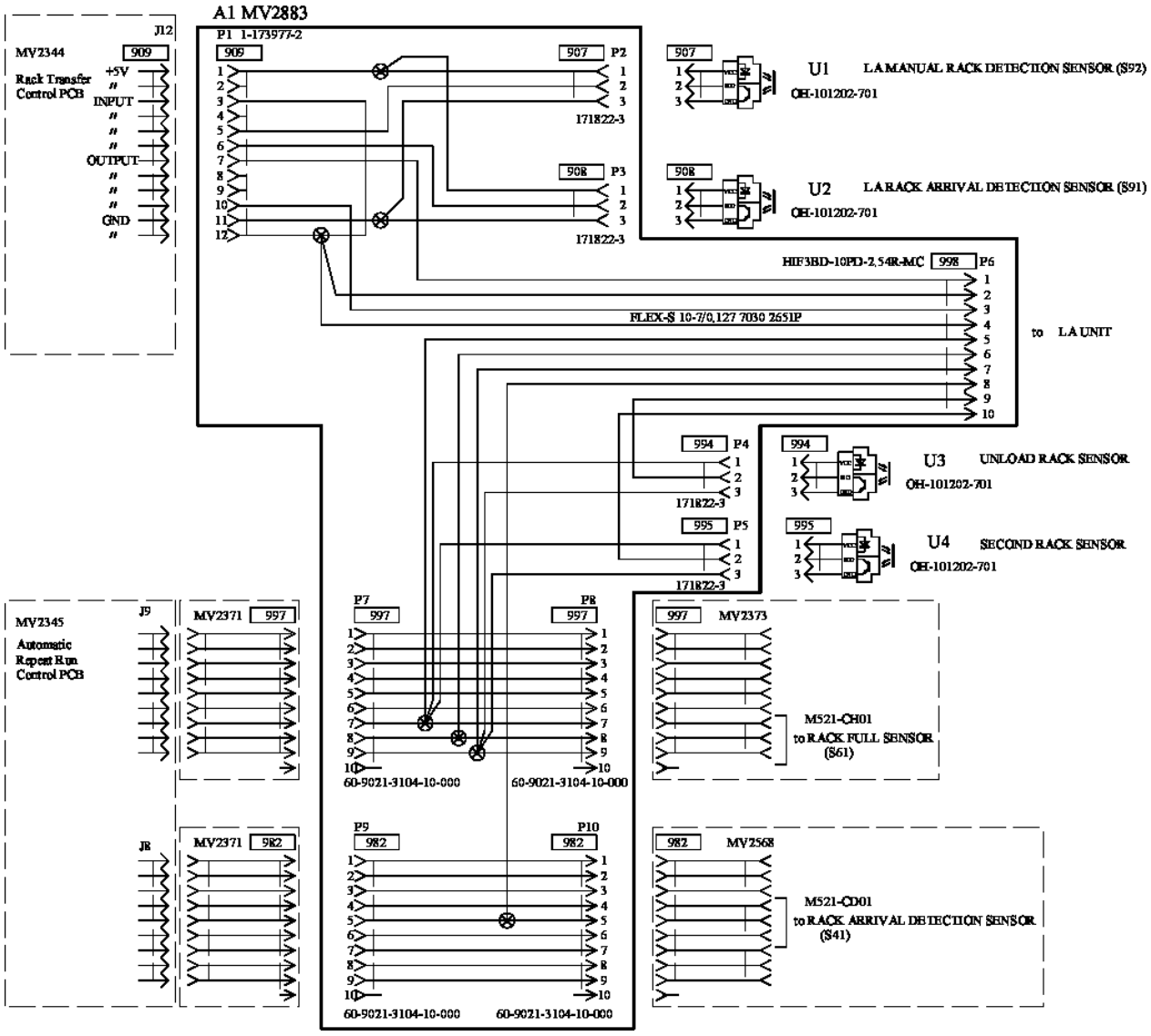




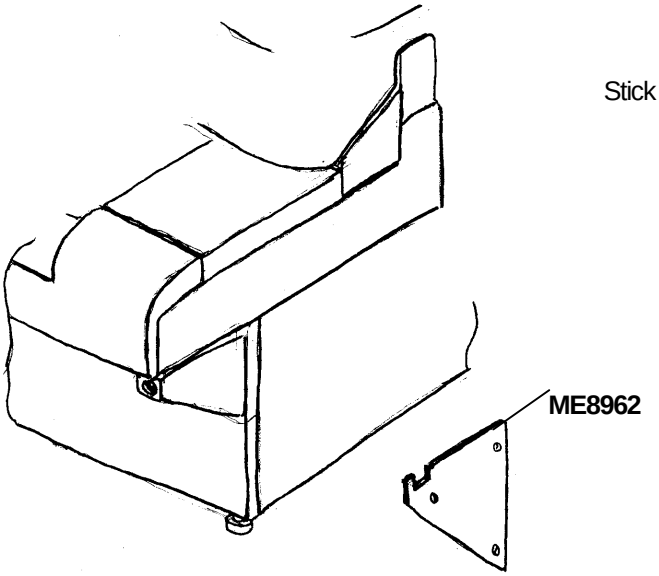


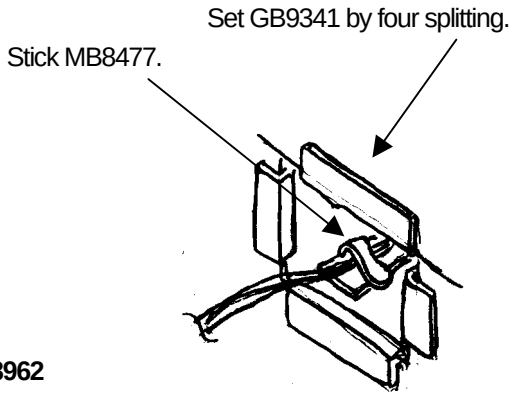
(3) Mount cover hold ass'y and fix cable

(Cable connection)



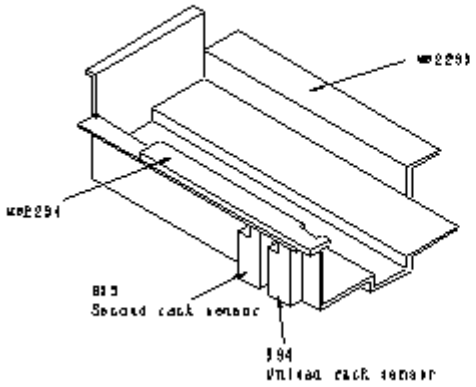
(4) Replace cover in rear side and fix cable.

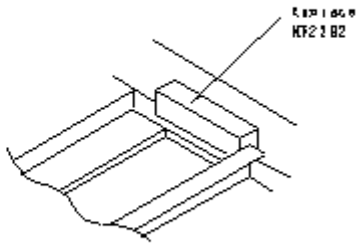




<Cable forming mouse>

(5) Replace Rack base ass'y (with sensors and a guide).
Replace push plate. (Dismount the right upper cover).





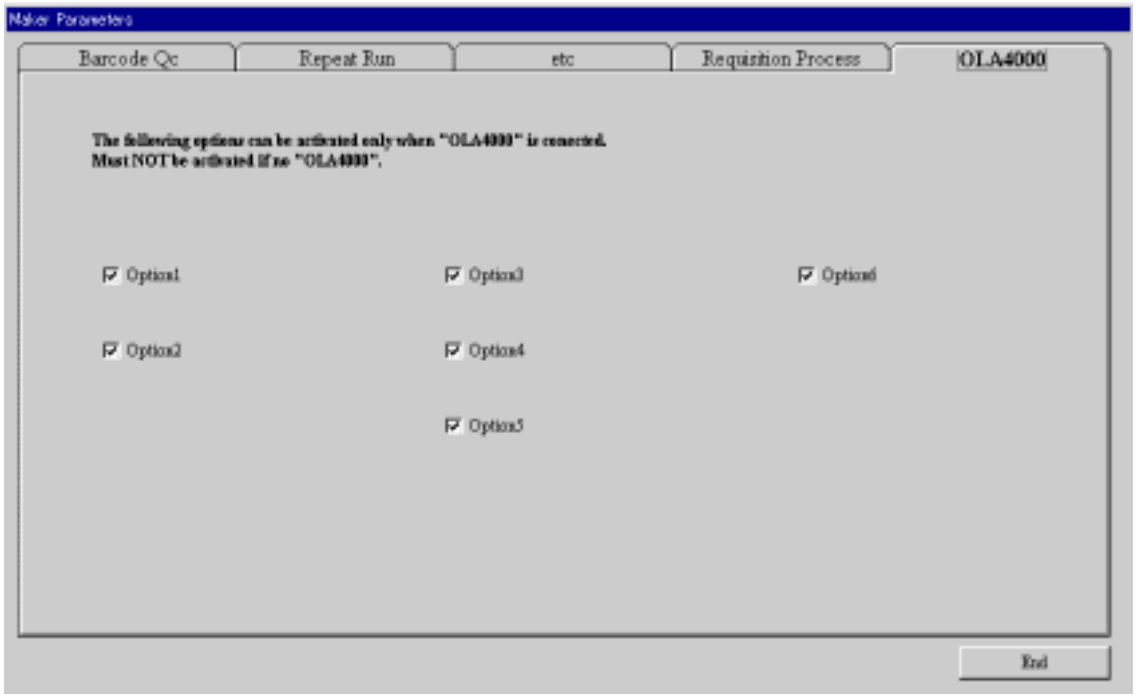
(6) Remount other parts and mount the new CA cover.

(7) Initialize sample rack set unit and adjust position that 2 new rack sensors are in the center of the rack.

■ AU640 for OLA4000 program System maintenance

Newly added features and explanations at V2.1S (or after) System Maintenance - Maker Parameter menu.

When OLA4000 is connected, each software option must be designated as described.



1. etc tab

The program is not changed though, the following set-up is necessary to connect with OLA4000.

LA Carry time: Must be 100(10sec)

After “Load OK” signal become OFF from ON, CA rack feed does not take place for (designated value) X 100ms.

When OLA4000 has a rack to load, loading must be completed before it.

When the value more than 100 is designated, racks that are loaded continuous Load OK signal may be not analyzed continuously. This results in throughput loss for normal patient, but Acal (or QC) rack analysis with plural racks may not be done properly.

Automatic Line Feeder: checked

Activate OLA4000 connection. When no modification kit is installed, it creates sensor error at mechanical initialize.

This switch enables rack reception from OLA4000. And connection on/off with OLA4000 can be possible at Start Condition menu.

2. OLA4000 tab

Newly added specification for OLA4000.

The following check box can be checked only when OLA4000 is connected.

Option1: Checked

RB and Acal host requisition is activated when normal patient is “Real-time online” mode.

Option2: Checked

QC host requisition is activated when normal patient is “Real-time online” mode.

Option3: Checked

Mode information is transmitted from additional comport.

Option4: Checked

Reagent information is transmitted from additional comport.

Option5: Checked

Alarm information is transmitted from additional comport.

Option6: Checked

Rack loading type from external LA.

OLA4000(robot arm type): checked

LBF(Japanese market only): unchecked

When this switch is checked, Load OK signal is output so that there is no rack at both side of rack loading position.

Manual revision	Module No.	Module name	Module revision	Revise Contents	Rev.1300 Module file name
0000	A	ALL module		Issued	
0100	A	ALL module		Revised on original structure	
0200	A	ALL module		Revised on original structure	
0300	A	ALL module	03	All module modified with new manual structure.	ALL module
0400	A0	Cover page	04	Rev.0400	e521a0.pdf
0400	AD	EL unit TOC	04	Eliminate D2, Add D11 - D32	e521ad.pdf
0400	AE	Software TOC	04	E1 newly added	e521ae.pdf
0400	AJ	Inspection card TOC	04	Newly added	e521aj.pdf
0400	AY	Appendix TOC	04	Y2,Y3,Y10 newly added	e521ay.pdf
0400	B04	Unit layout	04	Newly added.	e521b04.pdf
0400	B07	Parts/ unit list	04	Thermistor list is added.	e521b07.pdf
0400	D11	MV1005	04	Separated from D2, D2 has been eliminated	e521d11.pdf
0400	D12	MV1006	04	Separated from D2, D2 has been eliminated	e521d12.pdf
0400	D13	MV1013	04	Separated from D2, D2 has been eliminated	e521d13.pdf
0400	D14	MV1014	04	Separated from D2, D2 has been eliminated	e521d14.pdf
0400	D15	MV1019	04	Separated from D2, D2 has been eliminated	e521d15.pdf
0400	D16	MV1024	04	Separated from D2, D2 has been eliminated	e521d16.pdf
0400	D17	MV1025	04	Separated from D2, D2 has been eliminated	e521d17.pdf
0400	D18	MV1041	04	Separated from D2, D2 has been eliminated	e521d18.pdf
0400	D19	MV1950	04	Separated from D2, D2 has been eliminated	e521d19.pdf
0400	D20	MV1951	04	Separated from D2, D2 has been eliminated	e521d20.pdf
0400	D21	MV1986	04	Separated from D2, D2 has been eliminated	e521d21.pdf
0400	D22	MV2076	04	Separated from D2, D2 has been eliminated	e521d22.pdf
0400	D23	MV2190	04	Separated from D2, D2 has been eliminated	e521d23.pdf
0400	D24	MV2329	04	Separated from D2, D2 has been eliminated	e521d24.pdf
0400	D25	MV2344	04	Separated from D2, D2 has been eliminated	e521d25.pdf
0400	D26	MV2345	04	Separated from D2, D2 has been eliminated	e521d26.pdf
0400	D27	MV2346	04	Separated from D2, D2 has been eliminated	e521d27.pdf
0400	D28	MV2347	04	Separated from D2, D2 has been eliminated	e521d28.pdf
0400	D29	MV2354	04	Separated from D2, D2 has been eliminated	e521d29.pdf
0400	D30	MV2712	04	Separated from D2, D2 has been eliminated	e521d30.pdf
0400	D31	UDCD31A	04	Separated from D2, D2 has been eliminated	e521d31.pdf
0400	D32	MV2074	04	Separated from D2, D2 has been eliminated	e521d32.pdf
0400	E01	File structure	04	Newly added	e521e01.pdf
0400	E03	Pre-dilution	04	Add calculation example	e521e03.pdf
0400	E23	Alarm	04	Renewed	e521e23.pdf
0400	F27	Adjustment of the DC unit	04	(F27-1) 14+/-2 -> more than 5	e521f27.pdf
0400	F27	Adjustment of the DC unit	04	(F27-2) become ON -> OFF	e521f27.pdf
0400	F27	Adjustment of the DC unit	04	(F27-3) Added Fig 1,2 and 3	e521f27.pdf
0400	F27	Adjustment of the DC unit	04	(F27-5) A position is normally MAX.	e521f27.pdf
0400	F28	Adjustment of the FA unit	04	(F28-2) Add	e521f28.pdf
0400	F30	Adjustment of the FC unit	04	(F30-3) 8+/-3 -> more than 5	e521f30.pdf
0400	F30	Adjustment of the FC unit	04	(F30-4) 8+/-2 -> 9+/-2	e521f30.pdf
0400	F30	Adjustment of the FC unit	04	(F30-5) 5 -> 8 pulses	e521f30.pdf
0400	F30	Adjustment of the FC unit	04	(F30-6) 19+/-0.5 -> 14+/-0.5	e521f30.pdf
0400	g016aa01	M016-AA01	04	ECN521-0022	g016aa01.pdf
0400	g520fb01	M520-FB01	04	Add consumable part No.	g520fb01.pdf
0400	g521aa01	M521-AA01	04	ECN521-0001,0009,0034,0041	g521aa01.pdf
0400	g521cb01	M521-CB01	04	Add consumable part No.	g521cb01.pdf
0400	g521cc01	M521-CC01	04	ECN521-0006	g521cc01.pdf
0400	g521fa01	M521-FA01	04	ECN521-0010	g521fa01.pdf
0400	g521fd01	M521-FD01	04	ECN521-0010,0029	g521fd01.pdf
0400	g521fd11	M521-FD11	04	ECN521-0010,0029	g521fd11.pdf
0400	g521ga01	M521-GA01	04	Add consumable part No.	g521ga01.pdf
0400	g521ga11	M521-GA11	04	Add consumable part No.	g521ga11.pdf
0400	J01	Main body Inspection card	04	Newly added	e521j01.pdf
0400	J02	ISE inspection card	04	Newly added	e521j02.pdf
0400	MU5444	MU5444	04	Renewed 1-2 (Large size)	MU5444.pdf
0400	Y02	ANL piping diagram	04	Newly added	e521y02.pdf
0400	Y03	ISE piping diagram	04	Newly added	e521y03.pdf
0400	Y05	Reaction time chart	04	Newly added	e521y05.pdf
0400	Y10	Jig list	04	Newly added	e521y10.pdf

Manual revision	Module No.	Module name	Module revision	Revise Contents	Rev.1300 Module file name
0500	A0	Cover page	04	Rev.0500	e521a0.pdf
0500	AL	EL Drawing TOC	05	Add MV2712,2710,2711,2851	e521al.pdf
0500	AY	Appendix TOC	05	Add part Y04	e521ay.pdf
0500	D12	MV1006	05	page no. d2 ->d12	e521d12.pdf
0500	F26	Adjustment of DA unit	05	Page f26-2 Sensor name is opsite in fig.1.	e521f26.pdf
0500	Y02	ANL piping diagram	05	PDF converted from CAD data, Add DA	e521y02.pdf
0500	Y03	ISE piping diagram	05	PDF converted from CAD data	e521y03.pdf
0500	Y04	Time chart	05	Newly added	e521y05.pdf
0500	L(for ALL)	EL Drawing	05	PDF converted from CAD data	
0600	A0	Cover page	06	Rev.0500	e521a0.pdf
0600	AE	Software TOC	06	E23 module 100pages	e521ae.pdf
0600	AE	Software TOC	06	E51 Software history table	e521ae.pdf
0600	AF	Adjustment TOC	06	Add F51	e521af.pdf
0600	AI	System maintenance TOC	06	Add I11, I12	e521ai.pdf
0600	AK	IPB TOC	06	(Drawing) M510-SA01 Added	e521ak.pdf
0600	AK	IPB TOC	06	(Parts list)How to use added, (pages)EC02 1 ->2 Units 4 -> 3	e521ak.pdf
0600	AL	EL Drawing TOC	06	Add MU5462, MU5548, MV1885, MV2712	e521al.pdf
0600	AY	Appendix TOC	06	Jig list page 1->3	e521ay.pdf
0600	E23	Alarm	06	New alarms added for Ver 2.1(4040-4042, 4105-4108)	e521e23.pdf
0600	E23	Alarm	06	Rack No.and Cup pos No. added for Ver 2.1 (2131-2138,2146, 3220, 3238)	e521e23.pdf
0600	E51	Software history table	06	Newly added	e521e51.pdf
0600	F28	Adjustment of the FA unit	06	(F28-1) Add caution	e521f28.pdf
0600	F28	Adjustment of the FA unit	06	(F28-7) Add caution	e521f28.pdf
0600	F28	Adjustment of the FA unit	06	(F28-8) Add caution	e521f28.pdf
0600	F28	Adjustment of the FA unit	06	(F28-9) Add standard number	e521f28.pdf
0600	F31	Adjustment of the FA unit	06	(F31-1) Add caution	e521f31.pdf
0600	F31	Adjustment of the FA unit	06	(F31-7) Add caution	e521f31.pdf
0600	F51	Check method of probe clot detection	06	Newly added	e521f51.pdf
0600	I02	System maintenance	06	Ver 2.0	e521i02.pdf
0600	I11	Installation procedure for v2.0	06	Newly added *ver2.0	e521i11.pdf
0600	I12	Printer tool	06	Newly added *ver2.0	e521i12.pdf
0600	f510sa01	M510-SA01	06	Newly added	f510sa01.pdf
0600	g521aa01	M521-AA01	06	521-0048, 0047,0052, Add circuit sign	g521aa01.pdf
0600	g521ca01	M521-CA01	06	521-0067	g521ca01.pdf
0600	g521cc01	M521-CC01	06	521-0044	g521cc01.pdf
0600	g521da01	M521-DA01	06	521-0039,0026	g521da01.pdf
0600	g521da11	M521-DA11	06	521-0039,0026	g521da11.pdf
0600	g521db01	M521-DB01	06	Add remarks	g521db01.pdf
0600	g521dc01	M521-DC01	06	521-0032	g521dc01.pdf
0600	g521dd01	M521-DD01	06	521-0071	g521dd01.pdf
0600	g520ec02	M520-EC02	06	521-0051,0060	g520ec02.pdf
0600	g521fa01	M521-FA01	06	521-0046	g521fa01.pdf
0600	g521jd01	M521-JD01	06	520-0304	g521jd01.pdf
0600	g521jd11	M521-JD11	06	520-0304	g521jd11.pdf
0600	g521jd21	M521-JD21	06	520-0304	g521jd21.pdf
0600	g521jd31	M521-JD31	06	520-0304	g521jd31.pdf
0600	g521jd41	M521-JD41	06	520-0304	g521jd41.pdf
0600	g016ja01	M016-JA01	06	Pin change	g016ja01.pdf
0600	g521unit	Others	06	521-0067,0044,0052,0054,0064,0065, 0068, Software by Top 5 and Y2K	g521unit.pdf
0600	MU5444	MU5444	25	2/9 Eliminate DA stop sensor	MU5444.pdf
0600	MU5444	MU5444	27	3/9, 4/9, 5/9 New valve	MU5444.pdf
0600	MU5444	MU5444	28	2/9 New pressure sensor	MU5444.pdf
0600	Y02	ANL piping diagram	27	New Valves	e521y02.pdf
0600	Y02	ANL piping diagram	28	New Pressure sensor	e521y02.pdf
0600	Y10	Jig list	06	Add new jigs	e521y10.pdf

Manual revision	Module No.	Module name	Module revision	Revise Contents	Rev.1300 Module file name
0700	A0	Cover page	07	Rev. 0700	e521a0.pdf
0700	AG	Setup TOC	07	Add G51, G97, G98	e521ag.pdf
0700	AK	IPB TOC	07	Add OPG01, Other page 3 -> 4	e521ak.pdf
0700	AL	EL drawing TOC	07	Add MU5465, MV3261	e521al.pdf
0700	AX	Technical info. TOC	07	Newly added	e521ax.pdf
0700	AY	Appendix TOC	07	Add Y11	e521ay.pdf
0700	E20	Data mark	07	Renewed	e521e20.pdf
0700	E23	Alarm	07	(E23-37) 3142, 3143 add contents	e521e23.pdf
0700	F11	Parts exchange	07	OD level 0.7 -> 1.4	e521f11.pdf
0700	G51	ISE Setup	07	Newly added	e521g51.pdf
0700	G97	Dye solution for Disp. test	07	Newly added	e521g97.pdf
0700	G98	Jack position	07	Newly added	e521g98.pdf
0700	f521opg01	M521-OPG01	07	Newly added for OPG01(Connection kit for OLA4000)	f521opg01.pdf
0700	g521aa01	M521-AA01	07	ECN521-0089, 0103	g521aa01.pdf
0700	g521cb01	M521-CB01	07	ECN521-0079, 0105	g521cb01.pdf
0700	g521cc01	M521-CC01	07	ECN521-0112	g521cc01.pdf
0700	g521cd01	M521-CD01	07	ECN521-0111	g521cd01.pdf
0700	g521ce01	M521-CE01	07	ECN521-0111	g521ce01.pdf
0700	g521da01	M521-DA01	07	ECN521-0081, 0106, 0111	g521da01.pdf
0700	g521da11	M521-DA11	07	ECN521-0081, 0107, 0111	g521da11.pdf
0700	g520ec02	M520-EC02	07	ECN521-0082, 0090, 0108	g520ec02.pdf
0700	g521fa01	M521-FA01	07	ECN521-0076	g521fa01.pdf
0700	g520fb01	M520-FB01	07	ECN521-0100	g520fb01.pdf
0700	g521fd01	M521-FD01	07	ECN521-0076	g521fd01.pdf
0700	g521fd11	M521-FD11	07	ECN521-0076	g521fd11.pdf
0700	g521ga01	M521-GA01	07	ECN521-0040, 0073	g521ga01.pdf
0700	g521ga11	M521-GA11	07	ECN521-0040	g521ga11.pdf
0700	g016aa01	M016-AA01	07	ECN521-0069, 0087, 0093,	g016aa01.pdf
0700	g521other	M521others	07	ECN521-0076, 0079, 0082, 0090, 0092	g521other.pdf
0700	g521opg01	M521-OPG01	07	Newly added for OPG01(Connection kit for OLA4000)	g521opg01.pdf
0700	MU5465	MU5465	01	Newly added for OPG01(Connection kit for OLA4000)	MU5465.pdf
0700	MV3261	MV3261	01	Newly added for OPG01(Connection kit for OLA4000)	MV3261.pdf
0700	X01	Exchange of GA unit	07	Newly added	e521x01.pdf
0700	X02	Exchange of DA01 unit	07	Newly added	e521x02.pdf
0700	X03	Exchange of DA11 unit	07	Newly added	e521x03.pdf
0700	X04	Optical com error	07	Newly added	e521x04.pdf
0700	X05	Temprature control	07	Newly added	e521x05.pdf
0700	X06	Power failure	07	Newly added	e521x06.pdf
0700	Y11	OPG01(Connection kit for OLA4000)	07	Newly added for OPG01(Connection kit for OLA4000)	e521y11.pdf
1000	g521AA01	M521-AA01	08	ECN	g521AA01.pdf
1000	g521DA01	M521-DA01	08	ECN	g521DA01.pdf
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1000	g521FD01	M521-FD01	08	ECN	g521FD01.pdf
1000	g521FD11	M521-FD11	08	ECN	g521FD11.pdf
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0400	B04	Unit layout	04	Newly added.	e521b04.pdf
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0600	F28	Adjustment of the FA unit	06	(F28-9) Add standard number	e521f28.pdf
1100	F28	Adjustment of the FA unit	11	(F28-6) Arm height adjusted by Jig	e521f28.pdf
0400	F30	Adjustment of the FC unit	04	(F30-3) 8+/-3 -> more than 5	e521f30.pdf

Manual revision	Module No.	Module name	Module revision	Revise Contents	Rev.1300 Module file name
0400	F30	Adjustment of the FC unit	04	(F30-4) 8+/-2 -> 9+/-2	e521f30.pdf
0400	F30	Adjustment of the FC unit	04	(F30-5) 5 -> 8 pulses	e521f30.pdf
0400	F30	Adjustment of the FC unit	04	(F30-6) 19+/-0.5 -> 14+/-0.5	e521f30.pdf
0600	F31	Adjustment of the FA unit	06	(F31-1) Add caution	e521f31.pdf
0600	F31	Adjustment of the FA unit	06	(F31-7) Add caution	e521f31.pdf
1100	F31	Adjustment of the FA unit	11	(F31-6) Arm height adjusted by Jig	e521f31.pdf
0600	F51	Check method of probe clot detection	06	Newly added	e521f51.pdf
1000	G01	Set up	10	M526 correspondence	e521g01.pdf
0700	G51	ISE Setup	07	Newly added	e521g51.pdf
0700	G97	Dye solution for Disp. test	07	Newly added	e521g97.pdf
0700	G98	Jack position	07	Newly added	e521g98.pdf
1100	I01	AU640 Software setup	11	Display Setting, Sound setting	e521I01.pdf
1100	I02	System maintenance	11	I02a -> I02, I02b -> I13	e521I02.pdf
0600	I02	System maintenance	06	Ver 2.0	e521i02.pdf
1000	I02a	System maintenance	10	M526 correspondence	e521I02a.pdf
1000	I02b	System maintenance _M526	10	M526 correspondence	e521I02b.pdf
0600	I11	Installation procedure for v2.0	06	Newly added *ver2.0	e521i11.pdf
0600	I12	Printer tool	06	Newly added *ver2.0	e521i12.pdf
1100	I13	Parameter set up(Ver.4.2)	11	Converted from I02b	e521I13.pdf
1200	I14	Parameter set up(Ver.5.0)	12	Newly added	e521I14.pdf
1300	I14	Parameter set up(Ver.5.0)	13	Setting of Usage of different lot No. Reagent is not correct. (No: Stop, Yes: Continue)-> (Uncheck: Continue, Check: Stop)	e521I14.pdf
1100	J01	Inspection card ANL	11	Renewed	e521j01.pdf
0400	J01	Main body Inspection card	04	Newly added	e521j01.pdf
1300	J01	Inspection card ANL	13	FA/ FD AFC grease, Add SA grease up, Add EC grease up (ECN521-090, 162)	e521j01.pdf
1100	J02	Inspection card ISE	11	Renewed	e521j02.pdf
0400	J02	ISE inspection card	04	Newly added	e521j02.pdf
1100	J10	Inspection Contents	11	Newly added	e521j10.pdf
1300	J10	Inspection Contents	13	FA/ FD AFC grease, Add SA grease up, Add EC grease up (ECN521-090, 162)	e521j10.pdf
0600	f510sa01	M510-SA01	06	Newly added	f510sa01.pdf
0700	f521opg01	M521-OPG01	07	Newly added for OPG01(Connection kit for OLA4000)	f521opg01.pdf
1300	f521opg01	M521-OPG01	13	ECN521-0172	f521opg01.pdf
0400	g016aa01	M016-AA01	04	ECN521-0022	g016aa01.pdf
0700	g016aa01	M016-AA01	07	ECN521-0069, 0087, 0093,	g016aa01.pdf
1100	g016ja01	M016-JA01	11	ECN521-0145, R<->P	g016ja01.pdf
0600	g016ja01	M016-JA01	06	Pin change	g016ja01.pdf
1200	g016ja01	M016-JA01	12	ECN526-0009	g016ja01.pdf
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0600	g520ec02	M520-EC02	06	521-0051,0060	g520ec02.pdf
0700	g520ec02	M520-EC02	07	ECN521-0082, 0090, 0108	g520ec02.pdf
1200	g520ec02	M520-EC02	12	ECN521-0162, 526-0034	g520ec02.pdf
0400	g520fb01	M520-FB01	04	Add consumable part No.	g520fb01.pdf
0700	g520fb01	M520-FB01	07	ECN521-0100	g520fb01.pdf
1100	g520fc01	M520-FC01	11	ECN521-0156	g520fc01.pdf
1200	g520fc01	M520-FC01	12	ECN526-0021	g520fc01.pdf
1100	g520fc11	M520-FC11	11	ECN521-0156	g520fc11.pdf
1200	g520fc11	M520-FC11	12	ECN526-0021	g520fc11.pdf
1100	g521aa01	M521-AA01	11	ECN521-0132, 0135, R<->P	g521aa01.pdf
0400	g521aa01	M521-AA01	04	ECN521-0001,0009,0034,0041	g521aa01.pdf
0600	g521aa01	M521-AA01	06	521-0048, 0047,0052, Add circuit sign	g521aa01.pdf
0700	g521aa01	M521-AA01	07	ECN521-0089, 0103	g521aa01.pdf
1000	g521AA01	M521-AA01	08	ECN	g521AA01.pdf
1200	g521aa01	M521-AA01	12	Add PS No. , ECN521-0164	g521aa01.pdf

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1300	g521aa01	M521-AA01	13	ECN521-0170, 175	g521aa01.pdf
0600	g521ca01	M521-CA01	06	521-0067	g521ca01.pdf
1200	g521ca01	M521-CA01	12	ECN521-0169	g521ca01.pdf
1100	g521cb01	M521-CB01	11	ECN521-0133, R<->P	g521cb01.pdf
0400	g521cb01	M521-CB01	04	Add consumable part No.	g521cb01.pdf
0700	g521cb01	M521-CB01	07	ECN521-0079, 0105	g521cb01.pdf
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0400	g521cc01	M521-CC01	04	ECN521-0006	g521cc01.pdf
0600	g521cc01	M521-CC01	06	521-0044	g521cc01.pdf
0700	g521cc01	M521-CC01	07	ECN521-0112	g521cc01.pdf
0700	g521cd01	M521-CD01	07	ECN521-0111	g521cd01.pdf
0700	g521ce01	M521-CE01	07	ECN521-0111	g521ce01.pdf
1100	g521da01	M521-DA01	11	ECN521-0135, R<->P	g521da01.pdf
0600	g521da01	M521-DA01	06	521-0039,0026	g521da01.pdf
0700	g521da01	M521-DA01	07	ECN521-0081, 0106, 0111	g521da01.pdf
1000	g521DA01	M521-DA01	08	ECN	g521DA01.pdf
1200	g521da01	M521-DA01	12	ECN521-0155, 526-0023	g521da01.pdf
1300	g521da01	M521-DA01	13	ECN521-0173, 526-0049	g521da01.pdf
1100	g521da11	M521-DA11	11	R<->P	g521da11.pdf
0600	g521da11	M521-DA11	06	521-0039,0026	g521da11.pdf
0700	g521da11	M521-DA11	07	ECN521-0081, 0107, 0111	g521da11.pdf
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1200	g521da11	M521-DA11	12	ECN521-0155, 526-0023	g521da11.pdf
1300	g521da11	M521-DA11	13	ECN521-0173, 526-0049	g521da11.pdf
1100	g521db01	M521-DB01	11	R<->P	g521db01.pdf
0600	g521db01	M521-DB01	06	Add remarks	g521db01.pdf
1200	g521db01	M521-DB01	12	ECN521-0160, 526-0031	g521db01.pdf
1100	g521dc01	M521-DC01	11	R<->P	g521dc01.pdf
0600	g521dc01	M521-DC01	06	521-0032	g521dc01.pdf
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1300	g521dc01	M521-DC01	13	ECN521-0167, 526-0039 J brush	g521dc01.pdf
0600	g521dd01	M521-DD01	06	521-0071	g521dd01.pdf
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0700	g521fa01	M521-FA01	07	ECN521-0076	g521fa01.pdf
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0400	g521fd01	M521-FD01	04	ECN521-0010,0029	g521fd01.pdf
0700	g521fd01	M521-FD01	07	ECN521-0076	g521fd01.pdf
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1100	g521fd11	M521-FD11	11	ECN521-0132	g521fd11.pdf
0400	g521fd11	M521-FD11	04	ECN521-0010,0029	g521fd11.pdf
0700	g521fd11	M521-FD11	07	ECN521-0076	g521fd11.pdf
1000	g521FD11	M521-FD11	08	ECN	g521FD11.pdf
1100	g521ga01	M521-GA01	11	R<->P	g521ga01.pdf
0400	g521ga01	M521-GA01	04	Add consumable part No.	g521ga01.pdf
0700	g521ga01	M521-GA01	07	ECN521-0040, 0073	g521ga01.pdf
1000	g521GA01	M521-GA01	08	ECN	g521GA01.pdf
1100	g521ga11	M521-GA11	11	R<->P	g521ga11.pdf
0400	g521ga11	M521-GA11	04	Add consumable part No.	g521ga11.pdf
0700	g521ga11	M521-GA11	07	ECN521-0040	g521ga11.pdf
1000	g521GA11	M521-DA11	08	ECN	g521GA11.pdf
1100	g521jd01	M521-JD01	11	R<->P	g521jd01.pdf
0600	g521jd01	M521-JD01	06	520-0304	g521jd01.pdf
1100	g521jd11	M521-JD11	11	R<->P	g521jd11.pdf
0600	g521jd11	M521-JD11	06	520-0304	g521jd11.pdf
1200	g521jd11	M521-JD11	12	ECN521-0157, 526-0022	g521jd11.pdf
1100	g521jd21	M521-JD21	11	R<->P	g521jd21.pdf
0600	g521jd21	M521-JD21	06	520-0304	g521jd21.pdf

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1100	g521jd31	M521-JD31	11	R<->P	g521jd31.pdf
0600	g521jd31	M521-JD31	06	520-0304	g521jd31.pdf
1100	g521jd41	M521-JD41	11	R<->P	g521jd41.pdf
0600	g521jd41	M521-JD41	06	520-0304	g521jd41.pdf
0700	g521opg01	M521-OPG01	07	Newly added for OPG01(Connection kit for OLA4000)	g521opg01.pdf
1300	g521opg01	M521-OPG01	13	ECN521-0172	g521opg01.pdf
1100	g521other	M521others	11	ECN521-0132, 0135, 0140, 0142 0156, R<->P	g521other.pdf
0700	g521other	M521others	07	ECN521-0076, 0079, 0082, 0090, 0092	g521other.pdf
1200	g521other	M521others	12	PS1, 2 Change No. from MU5538, 9, etc	g521other.pdf
1300	g521other	M521others	13	ECN526-0028 OAI Ver5.0	g521other.pdf
1300	g521other	M521others	13	ECN526-0029 ODHVer5.0	g521other.pdf
1300	g521other	M521others	13	Add Degasser tank	g521other.pdf
1300	g521other	M521others	13	Add MU8320 NE Rack adapter (ME5357 x10)	g521other.pdf
1300	g521other	M521others	13	ECN521-0177,526-0055 AFC Gease	g521other.pdf
0600	g521unit	Others	06	521-0067,0044,0052,0054,0064,0065, 0068, Software by Top 5 and Y2K	g521unit.pdf
1000	g521UNIT	M521-UNIT	08	ECN	g521UNIT.pdf
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1200	g526aa01	M526-AA01	12	Add PS No., ECN526-0035, 26, 32	g526aa01.pdf
1300	g526aa01	M526-AA01	13	ECN526-0046, 51	g526aa01.pdf
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0500	L(for ALL)	EL Drawing	05	PDF converted from CAD data	
1300	L	EL drawing	-	Eliminated, move to EL drawing manual	---
0400	MU5444	MU5444	04	Renewed 1-2 (Large size)	MU5444.pdf
0600	MU5444	MU5444	25	2/9 Eliminate DA stop sensor	MU5444.pdf
0600	MU5444	MU5444	27	3/9, 4/9, 5/9 New valve	MU5444.pdf
0600	MU5444	MU5444	28	2/9 New pressure sensor	MU5444.pdf
1200	MU5444	MU5444	38	1/9 Thermistor ECN521-0135	MU5444.pdf
1200	MU5444	MU5444	45	3/9, 4/9, 5/9 MU5000 -> MU6910 ECN521-0164	MU5444.pdf
0700	MU5465	MU5465	01	Newly added for OPG01(Connection kit for OLA4000)	MU5465.pdf
1000	MU6505	MU6505	10	M526 correspondence	MU6505.pdf
1200	MU6505	MU6505	5	3/9, 4/9, 5/9 MU5000 -> MU6910 ECN526-0035	MU6505.pdf
1000	MU6506	MU6506	10	M526 correspondence	MU6506.pdf
1000	MU6508	MU6508	10	M526 correspondence	MU6508.pdf
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1000	MU6510	MU6510	10	M526 correspondence	MU6510.pdf
1000	MU6511	MU6511	10	M526 correspondence	MU6511.pdf
1000	MU6512	MU6512	10	M526 correspondence	MU6512.pdf
1000	MU6698	MU6698	10	M526 correspondence	MU6698.pdf
1000	MU6699	MU6699	10	M526 correspondence	MU6699.pdf
1000	MV1006	MV1006	10	M526 correspondence	MV1006.pdf
1200	MV1115	MV1115	6	ECN521-0143	MV1115.pdf
1000	MV2710	MV2710	10	M526 correspondence	MV2710.pdf
1000	MV2711	MV2711	10	M526 correspondence	MV2711.pdf
1000	MV2712	MV2712	10	M526 correspondence	MV2712.pdf
1000	MV2851	MV2851	10	M526 correspondence	MV2851.pdf
1100	MV3252	MV3252	11	Newly added	MV3252.pdf
0700	MV3261	MV3261	01	Newly added for OPG01(Connection kit for OLA4000)	MV3261.pdf

Manual revision	Module No.	Module name	Module revision	Revise Contents	Rev.1300 Module file name
1000	MV3269	MV3269	10	M526 correspondence	MV3269.pdf
1000	MV3270	MV3270	10	M526 correspondence	MV3270.pdf
1000	MV3272	MV3272	10	M526 correspondence	MV3272.pdf
1000	MV3278	MV3278	10	M526 correspondence	MV3278.pdf
1000	MV3279	MV3279	10	M526 correspondence	MV3279.pdf
1000	MV3287	MV3287	10	M526 correspondence	MV3287.pdf
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1000	MV3290	MV3290	10	M526 correspondence	MV3290.pdf
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0700	X01	Exchange of GA unit	07	Newly added	e521x01.pdf
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0700	X04	Optical com error	07	Newly added	e521x04.pdf
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0700	X06	Power failure	07	Newly added	e521x06.pdf
1100	X07	FA/ FD level detect. Failure	11	Newly added	e521x07.pdf
1100	X08	Retro fit	11	Newly added	e521x08.pdf
1100	X09	Program Ver. 4.2	11	Newly added	e521x09.pdf
1100	X10	ISE IPL ROM	11	Newly added	e521x10.pdf
1200	X11	Program Ver. 5.0	12	Newly added	e521x11.pdf
1300	X12	Reagent formula	13	Newly added(ECN521-181, 526-057)	e521x12.pdf
0400	Y02	ANL piping diagram	04	Newly added	e521y02.pdf
0500	Y02	ANL piping diagram	05	PDF converted from CAD data, Add DA	e521y02.pdf
0600	Y02	ANL piping diagram	27	New Valves	e521y02.pdf
0600	Y02	ANL piping diagram	28	New Pressure sensor	e521y02.pdf
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1100	Y02	ANL piping diagram	36	(M521-AA01)ECN521-0124 water pump	e521y02.pdf
1200	Y02	ANL piping diagram	45	(M521-AA01)ECN521-0164	e521y02.pdf
1300	Y02	ANL piping diagram	05	(M526-AA01) transration	e521y02.pdf
0400	Y03	ISE piping diagram	04	Newly added	e521y03.pdf
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1100	Y03	ISE piping diagram	07	ECN521-0069, 0093 New Nozzle	e521y03.pdf
0500	Y04	Time chart	05	Newly added	e521y05.pdf
0400	Y05	Reaction time chart	04	Newly added	e521y05.pdf
1300	Y08	Spec of Reagent ID	13	Newly added	e521y02.pdf
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0600	Y10	Jig list	06	Add new jigs	e521y10.pdf
1100	Y10	Jig list	11	Add Page 4	e521y10.pdf
0700	Y11	OPG01(Connection kit for OLA4000)	07	Newly added for OPG01(Connection kit for OLA4000)	e521y11.pdf
1300	Y11	OPG01(Connection kit for OLA4000)	13	Correction ECN521-172	e521y11.pdf
1100	Z01	Update History Rev.	11	Rev.1100	e521z01.pdf
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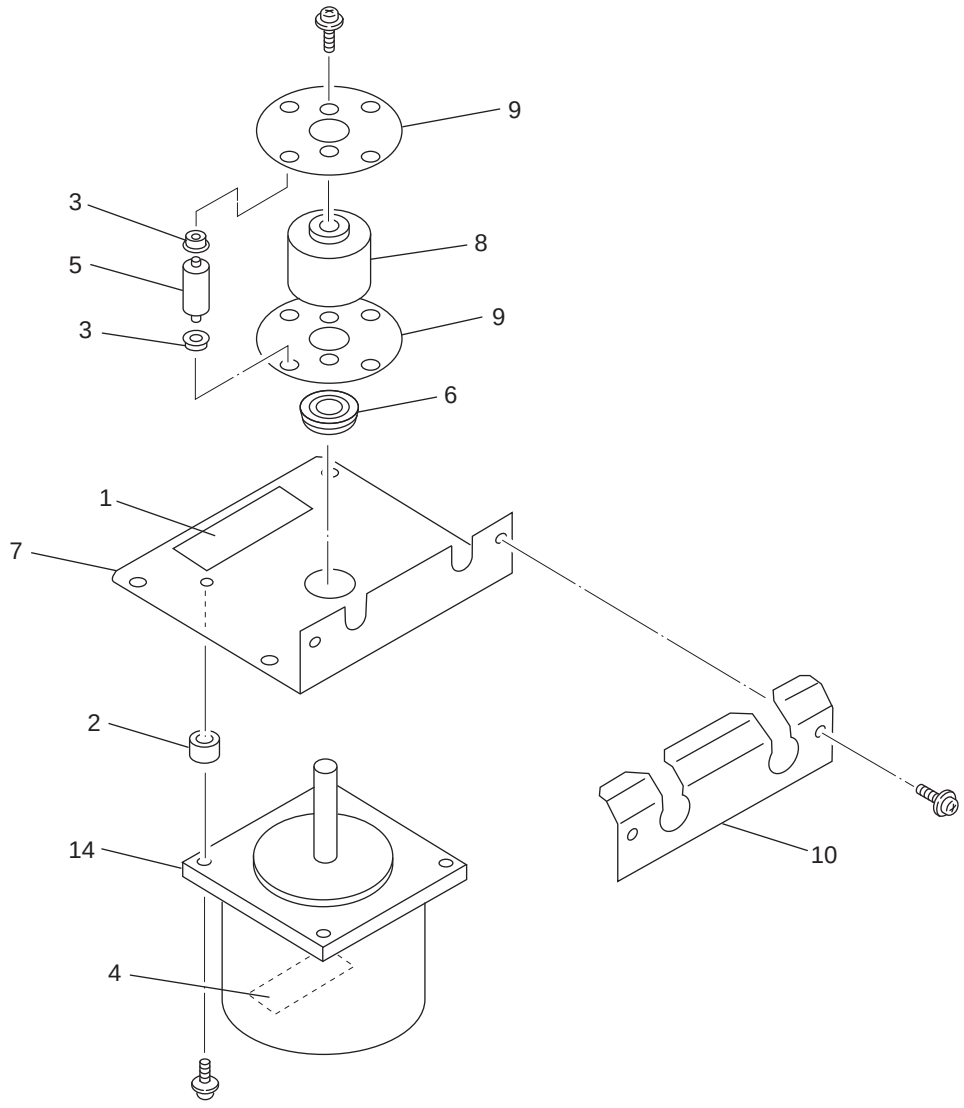
A B C D

1

2

3

4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
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OLYMPUS OPTICAL CO.,LTD. TOKYO		

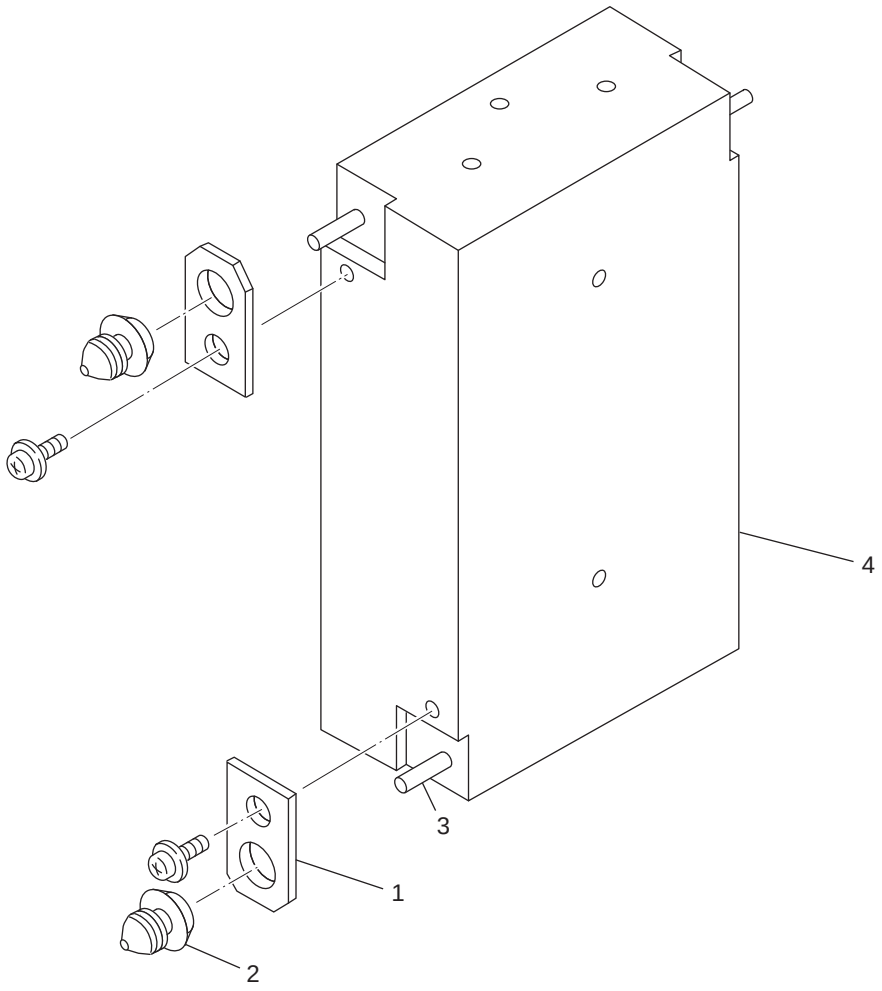
A B C D

1

2

3

4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
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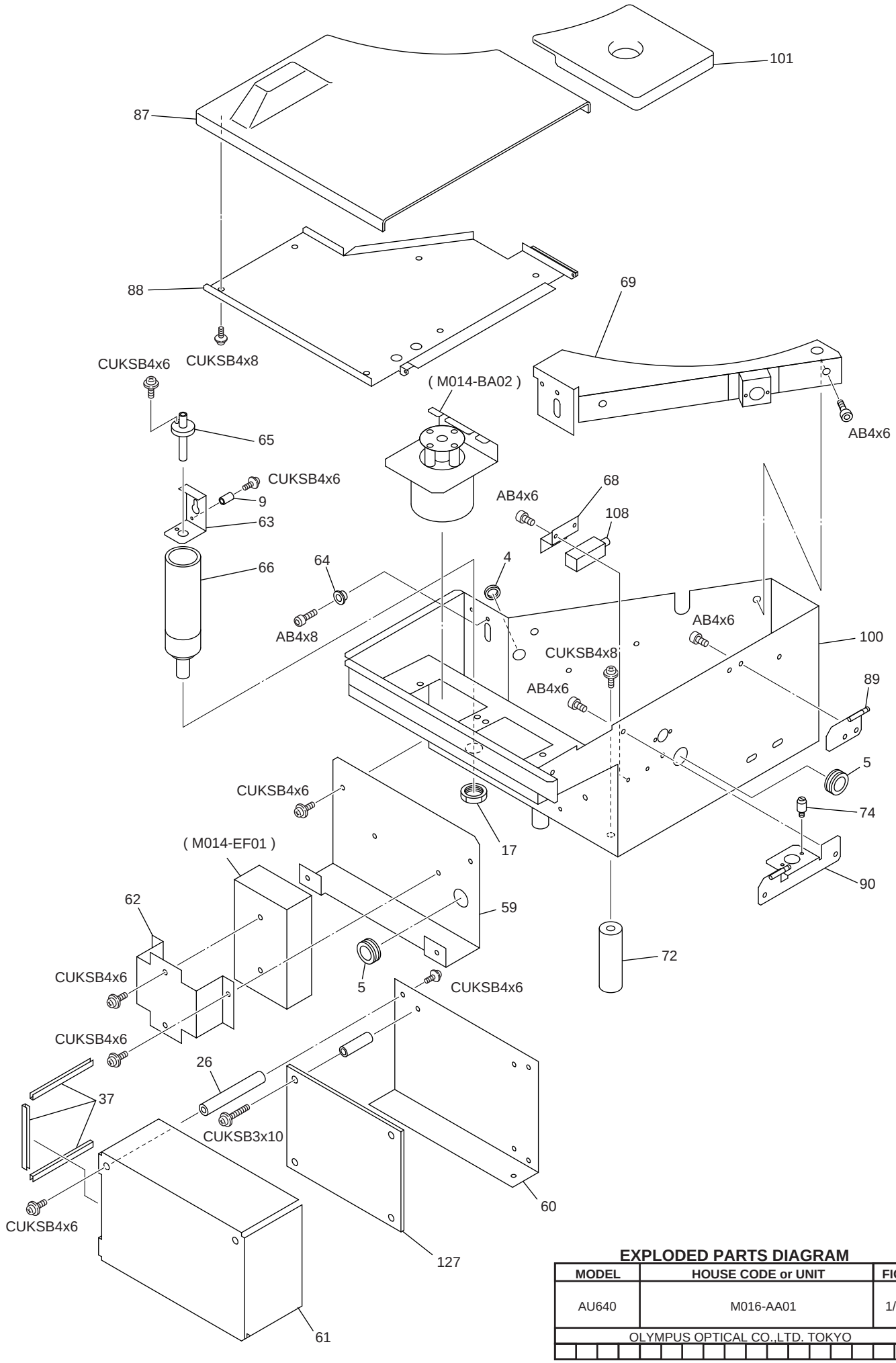
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
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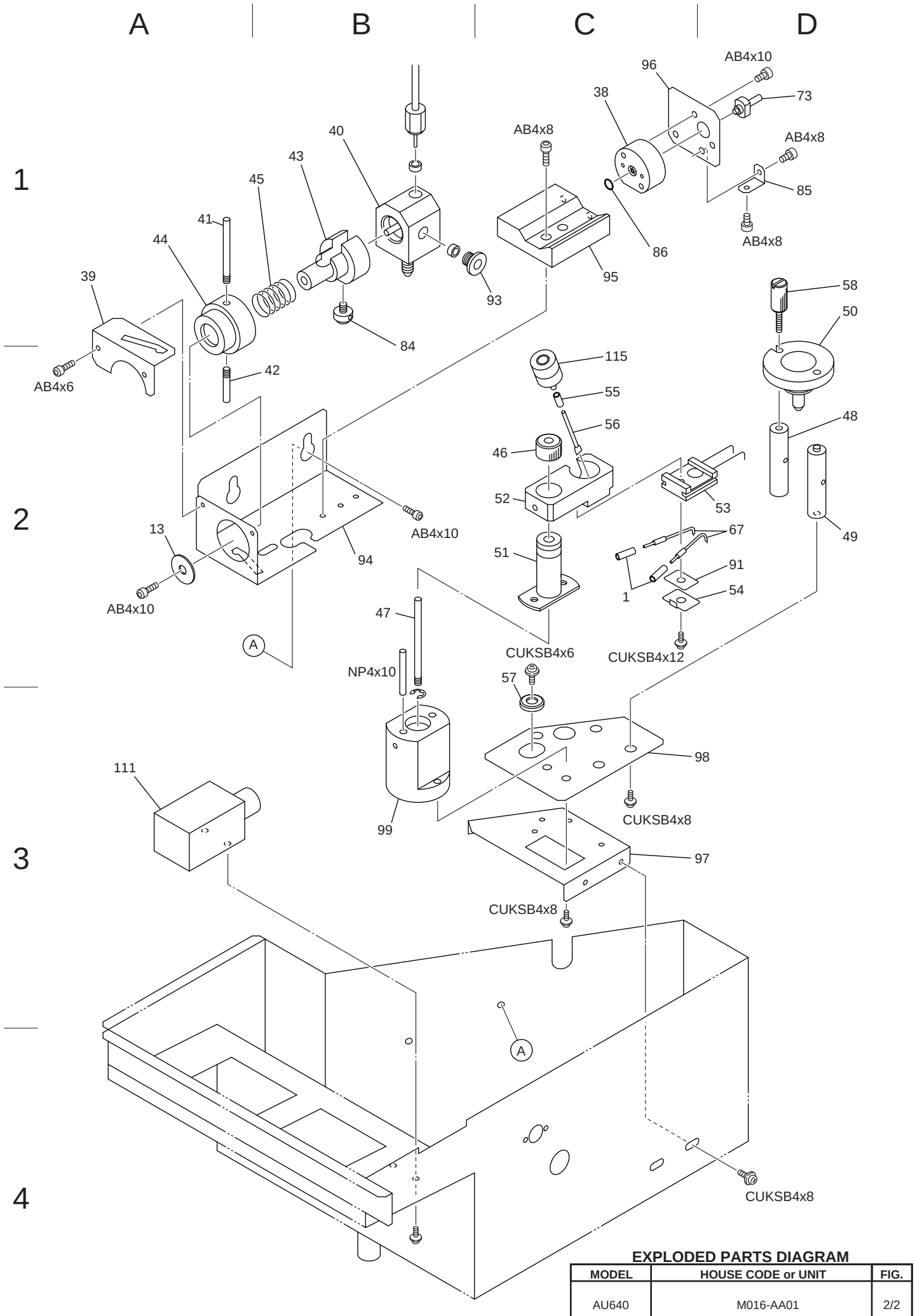
OLYMPUS OPTICAL CO.,LTD. TOKYO		



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
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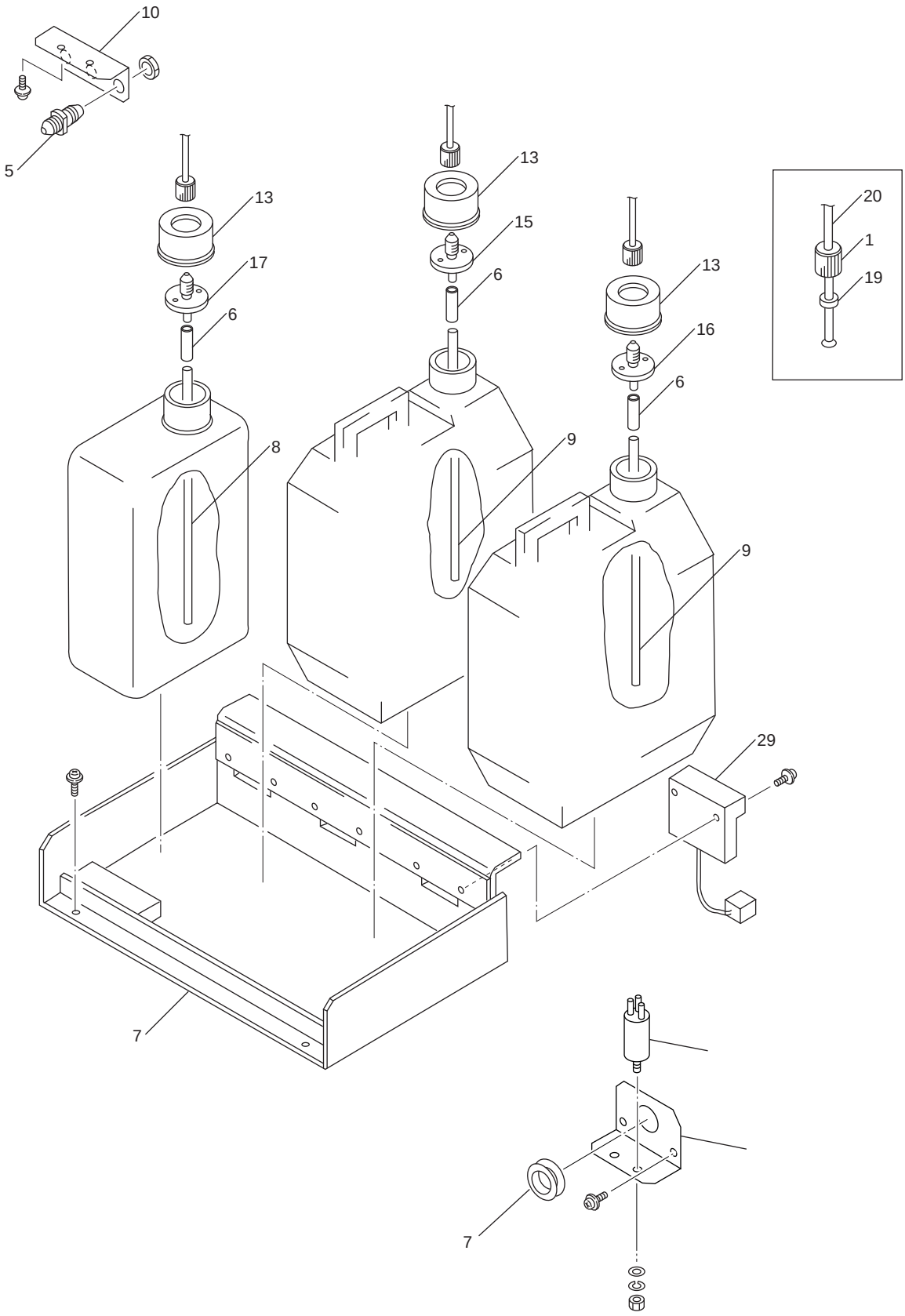
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
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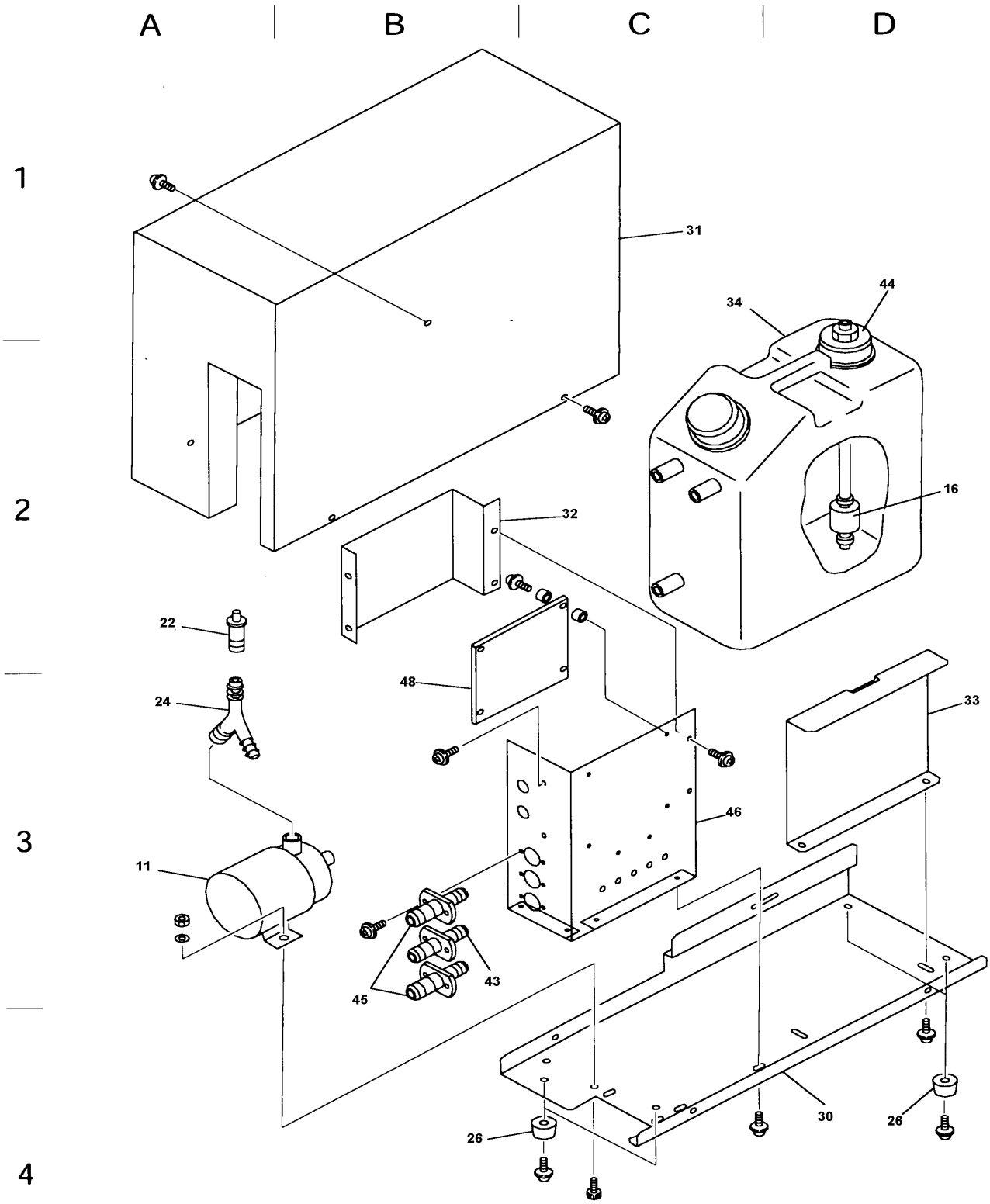
OLYMPUS OPTICAL CO.,LTD. TOKYO		



No.	MODEL	HOUSE CODE or UNIT	FIG
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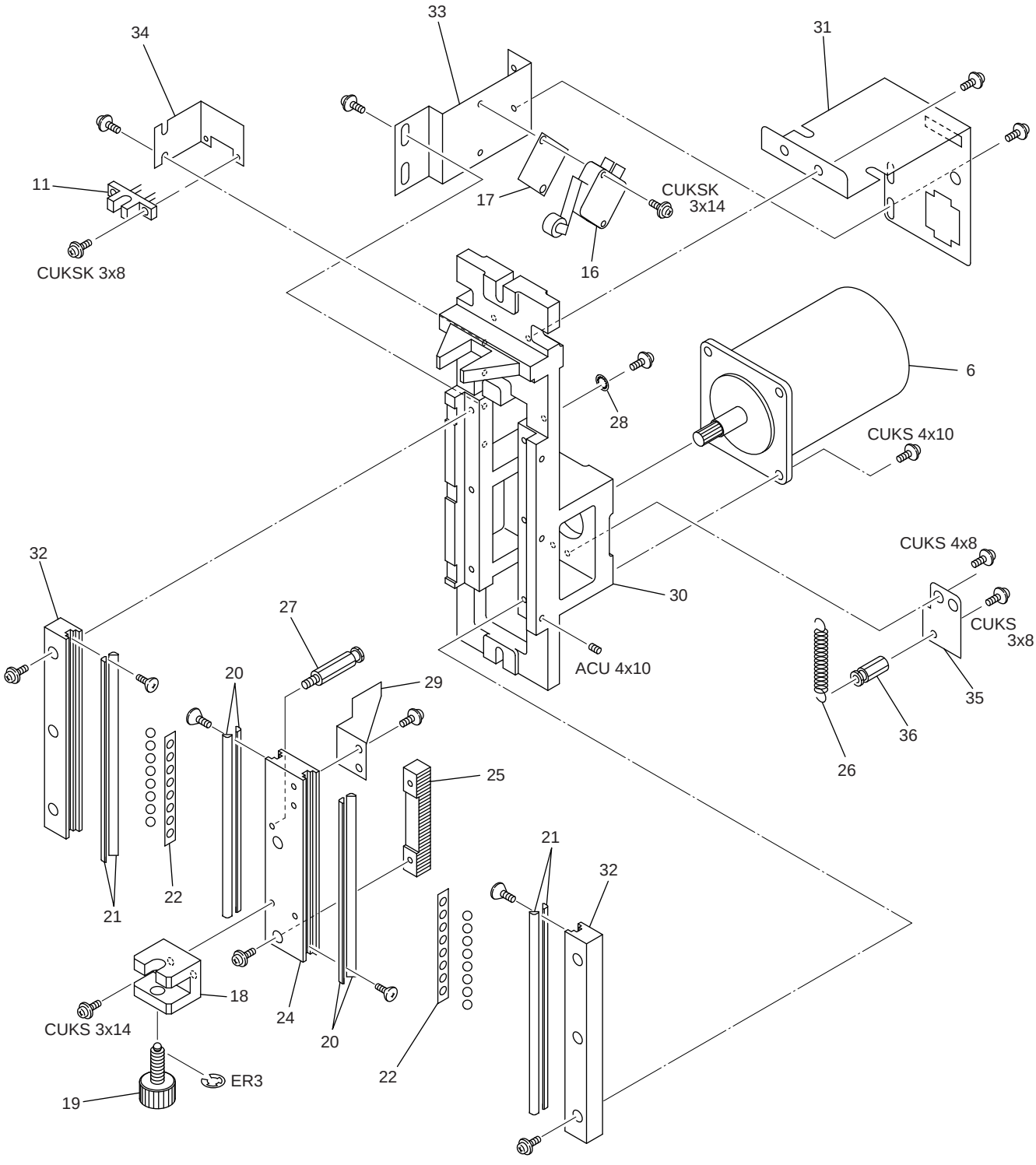
OLYMPUS OPTICAL CO.,LTD TOKYO, JAPAN			

A B C D

1 2 3 4

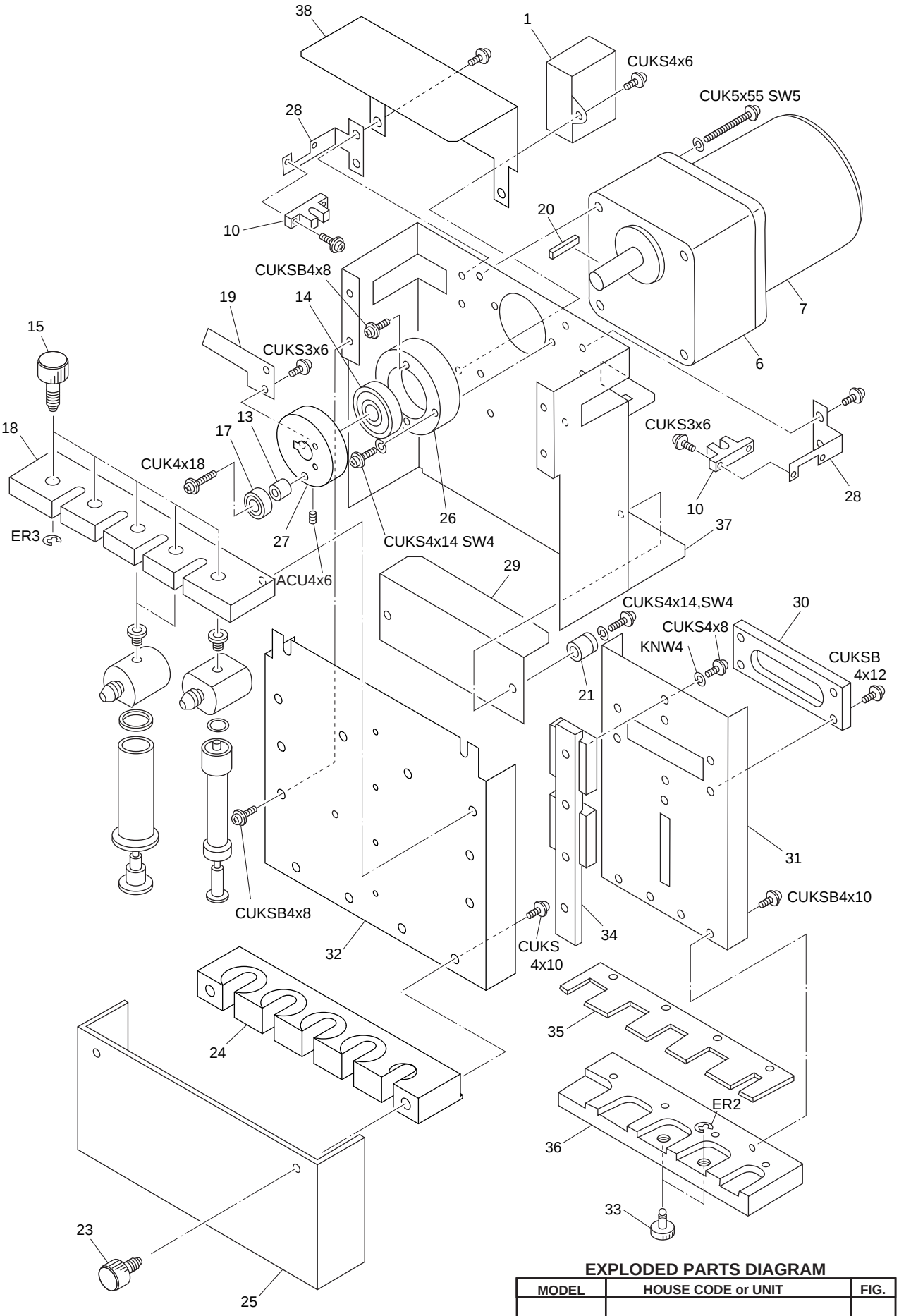


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M510-SA01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

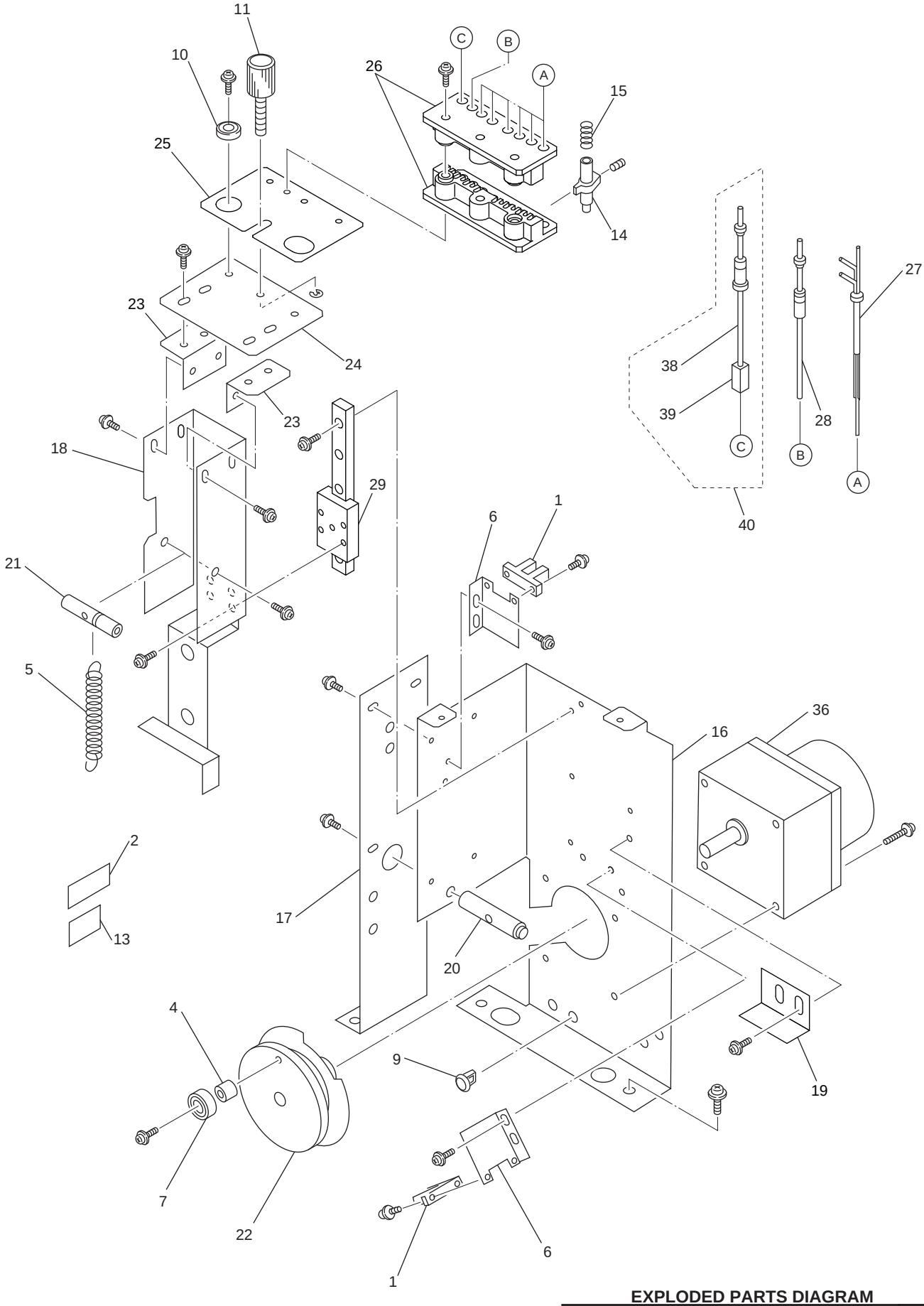


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M520-EC02	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

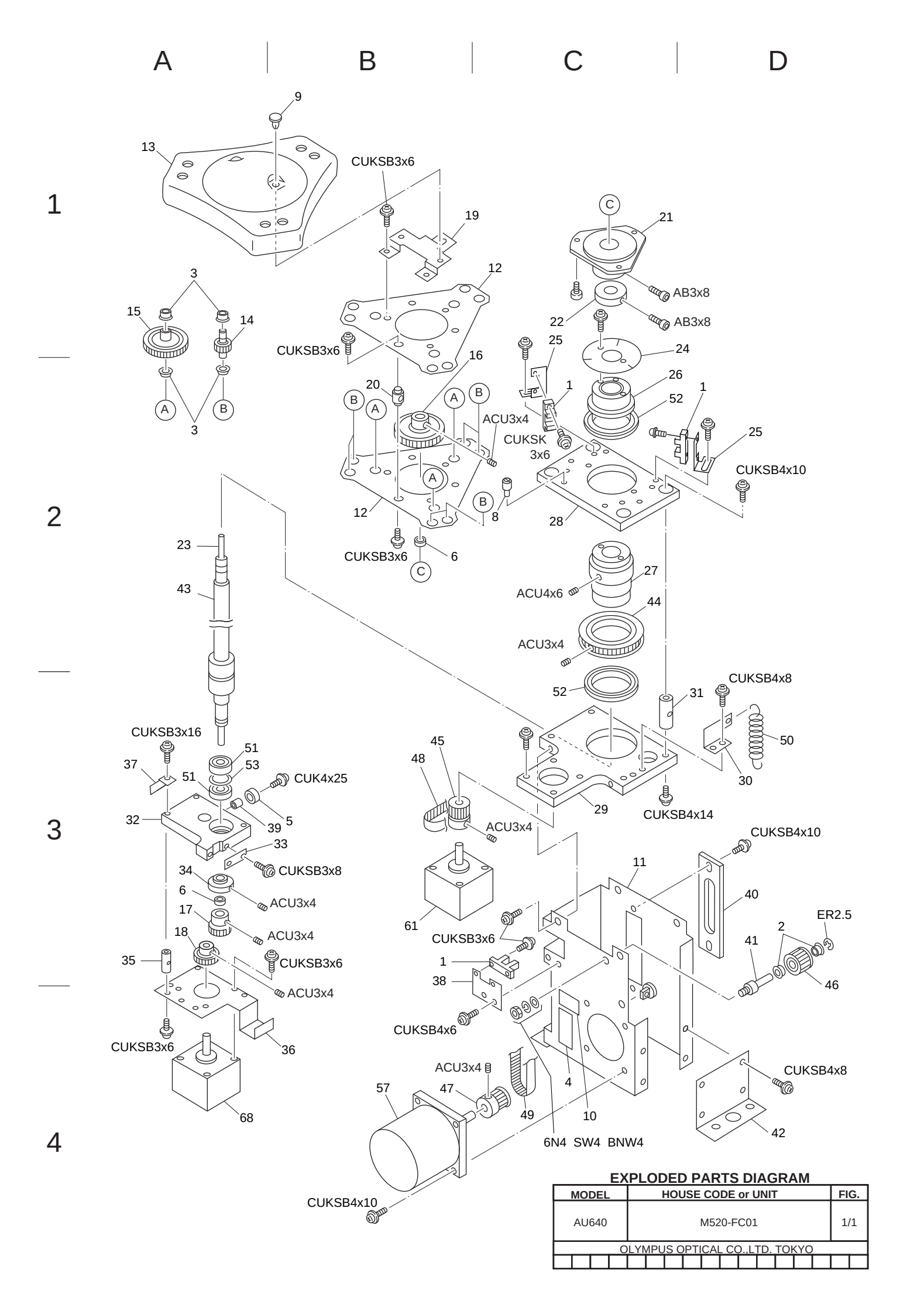
A B C D

1 2 3 4



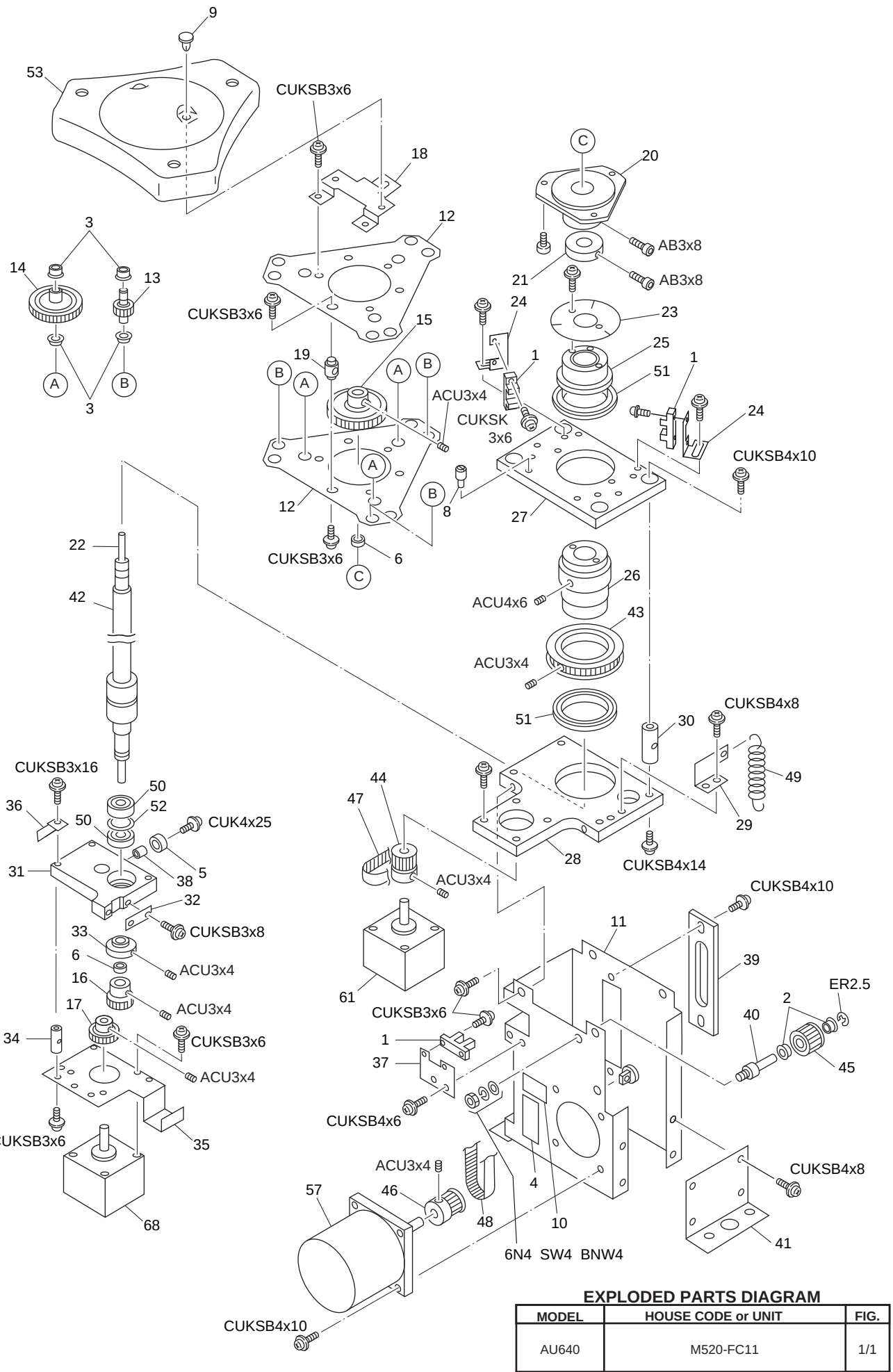
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M520- FB01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		



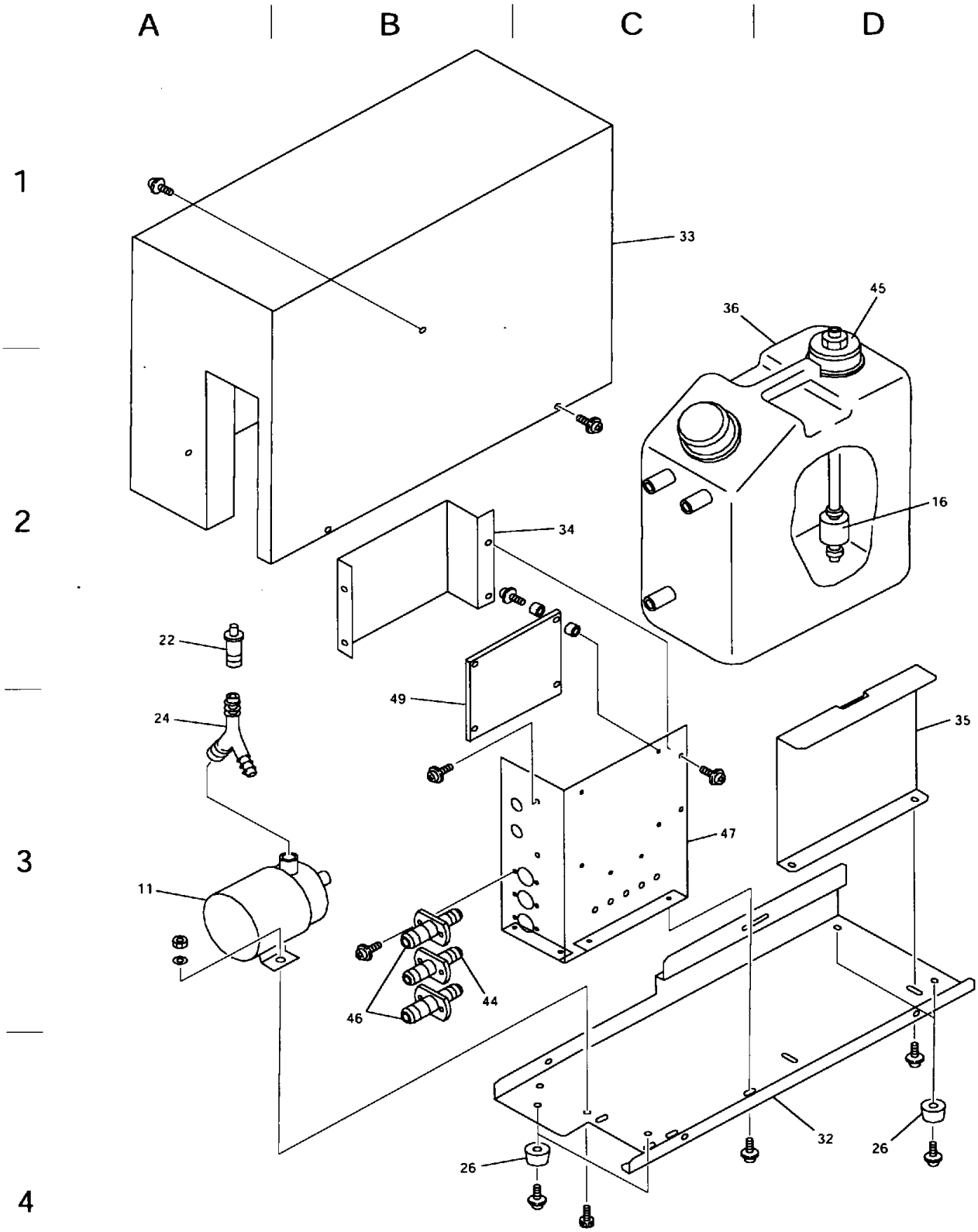
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M520-FC01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

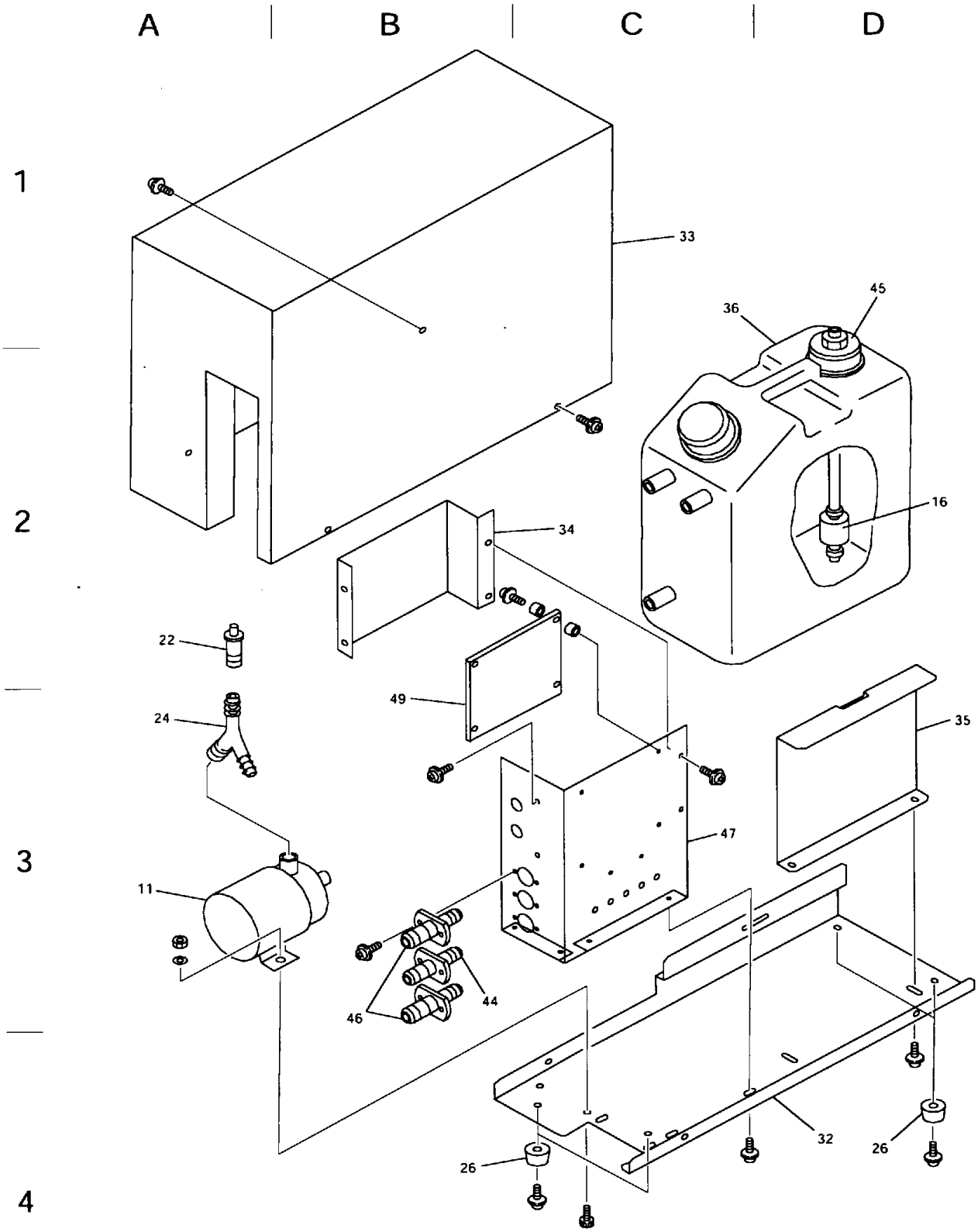


EXPLODED PARTS DIAGRAM

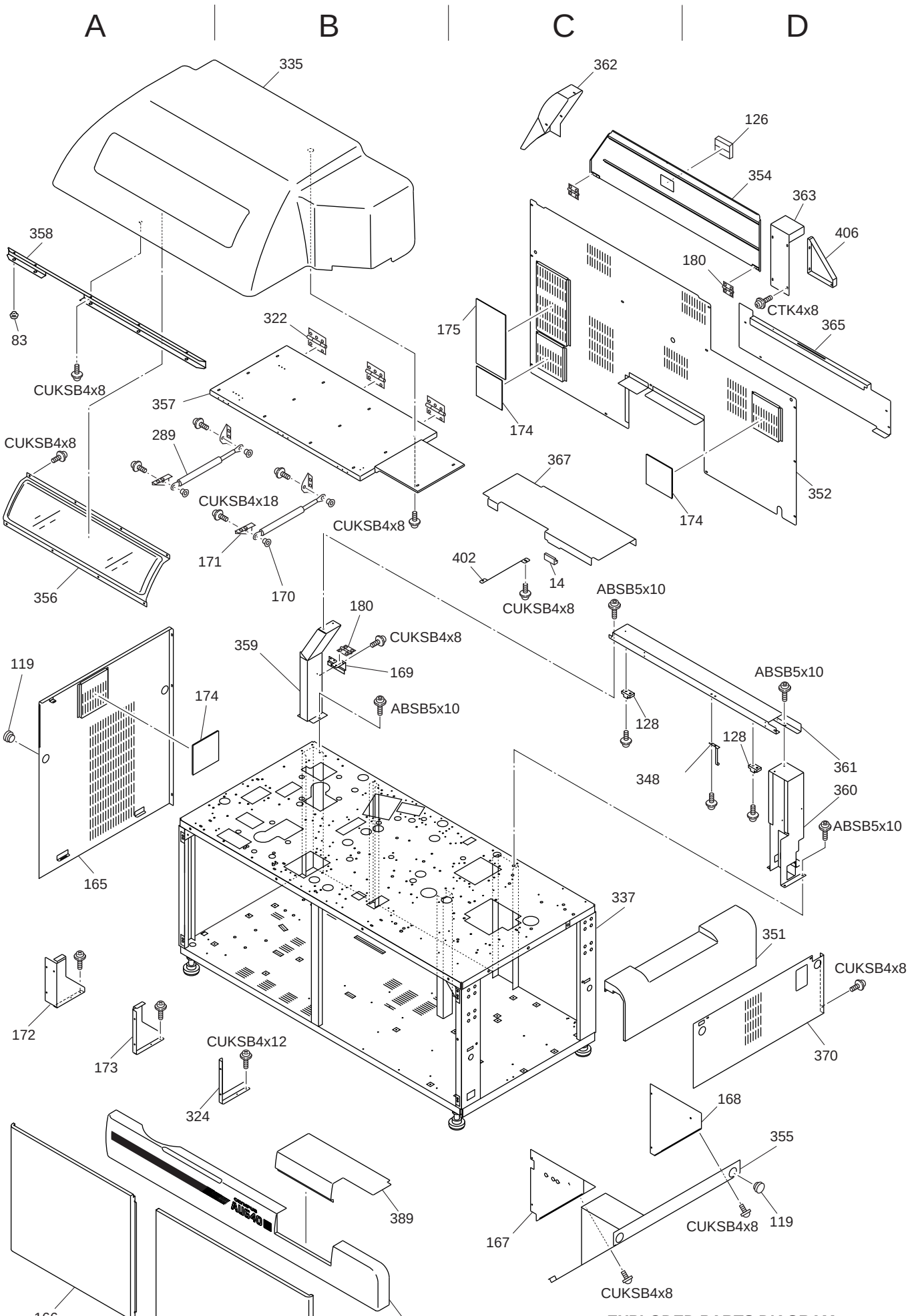
MODEL	HOUSE CODE or UNIT	FIG.
AU640	M520-FC11	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		



No.	MODEL	HOUSE CODE or UNIT	FIG
	AU640	M520-OPH01	1/1
OLYMPUS OPTICAL CO.,LTD TOKYO, JAPAN			

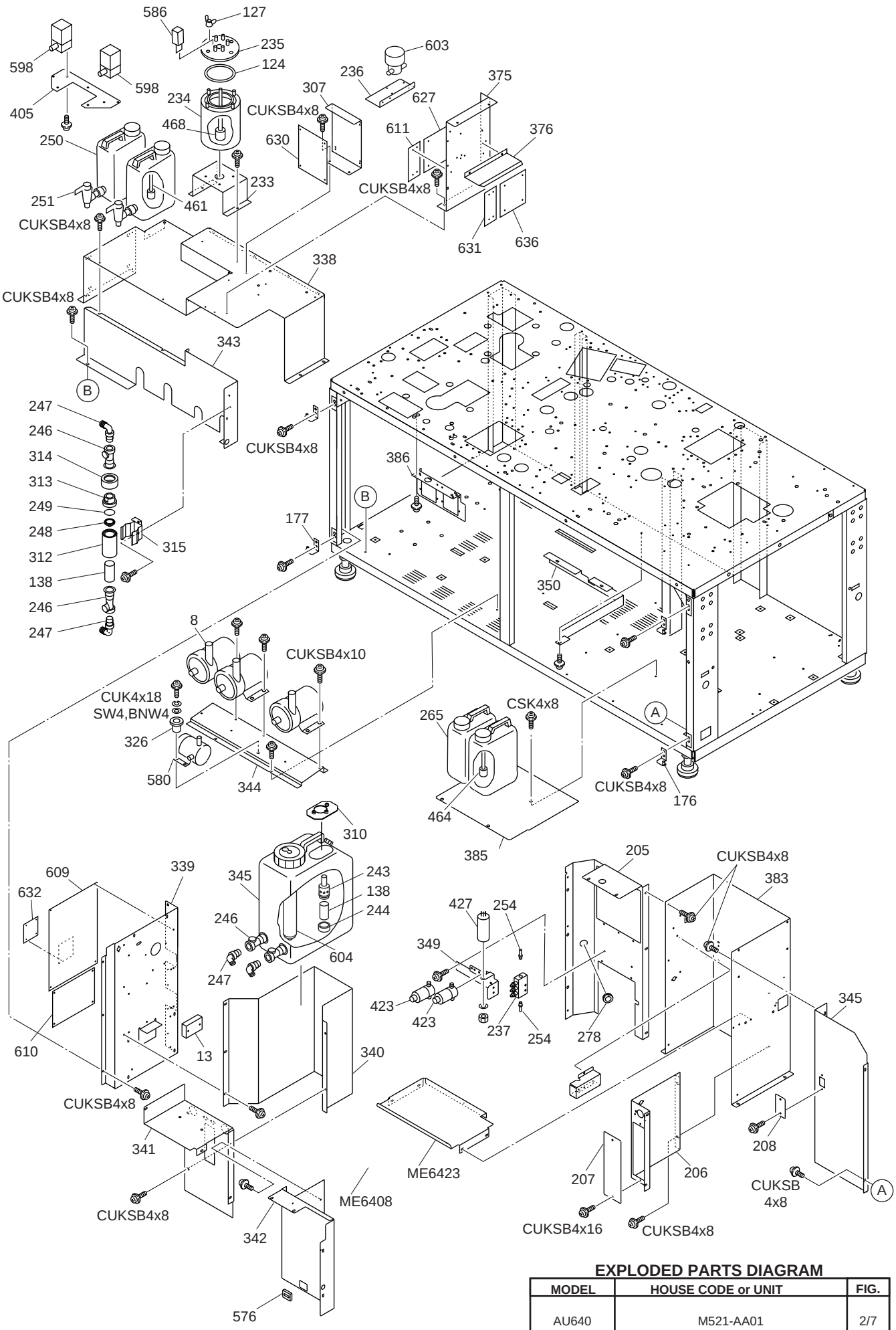


No.	MODEL	HOUSE CODE or UNIT	FIG
	AU640	M520-OPH02	1/1
OLYMPUS OPTICAL CO.,LTD TOKYO, JAPAN			



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	1/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

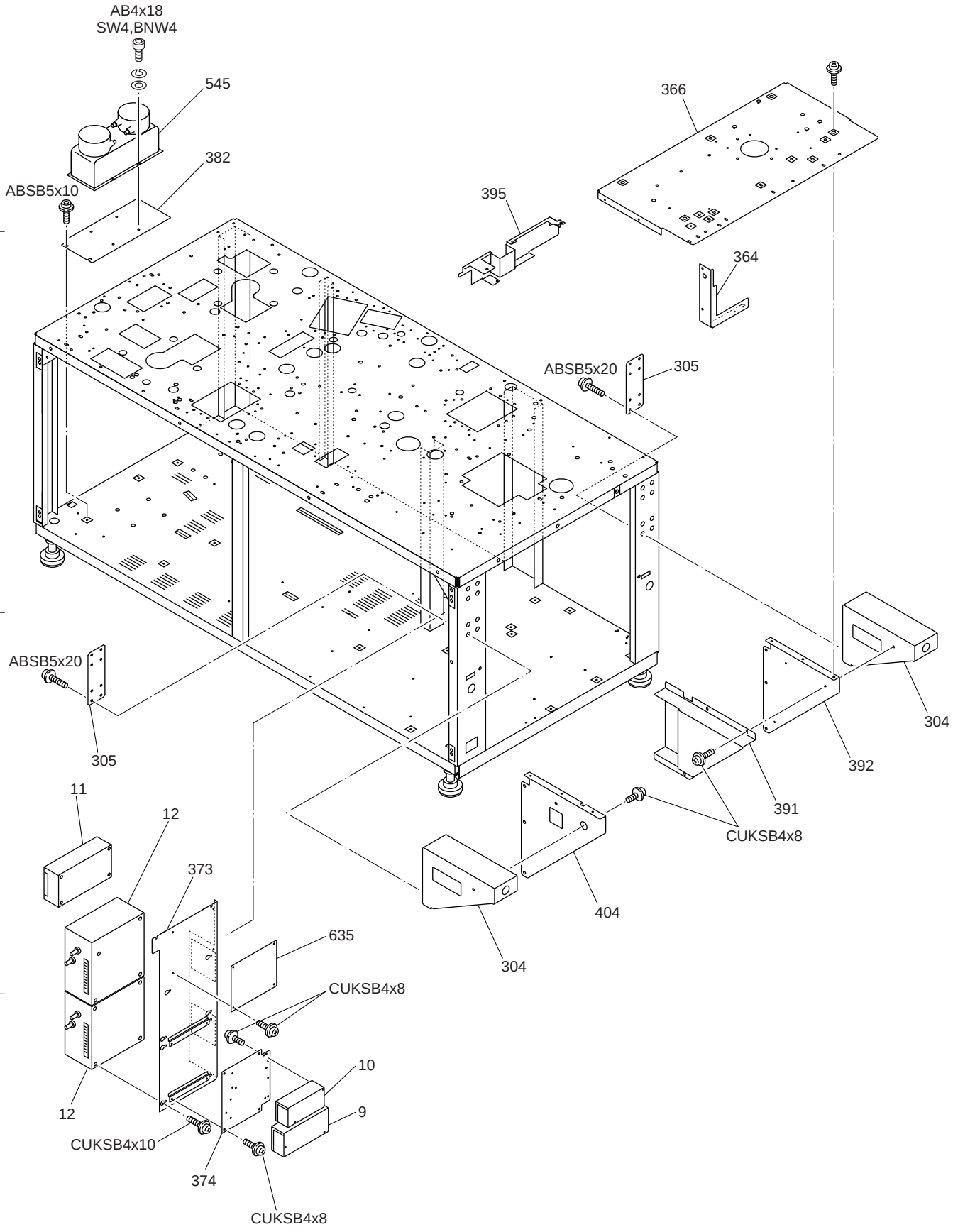


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	2/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

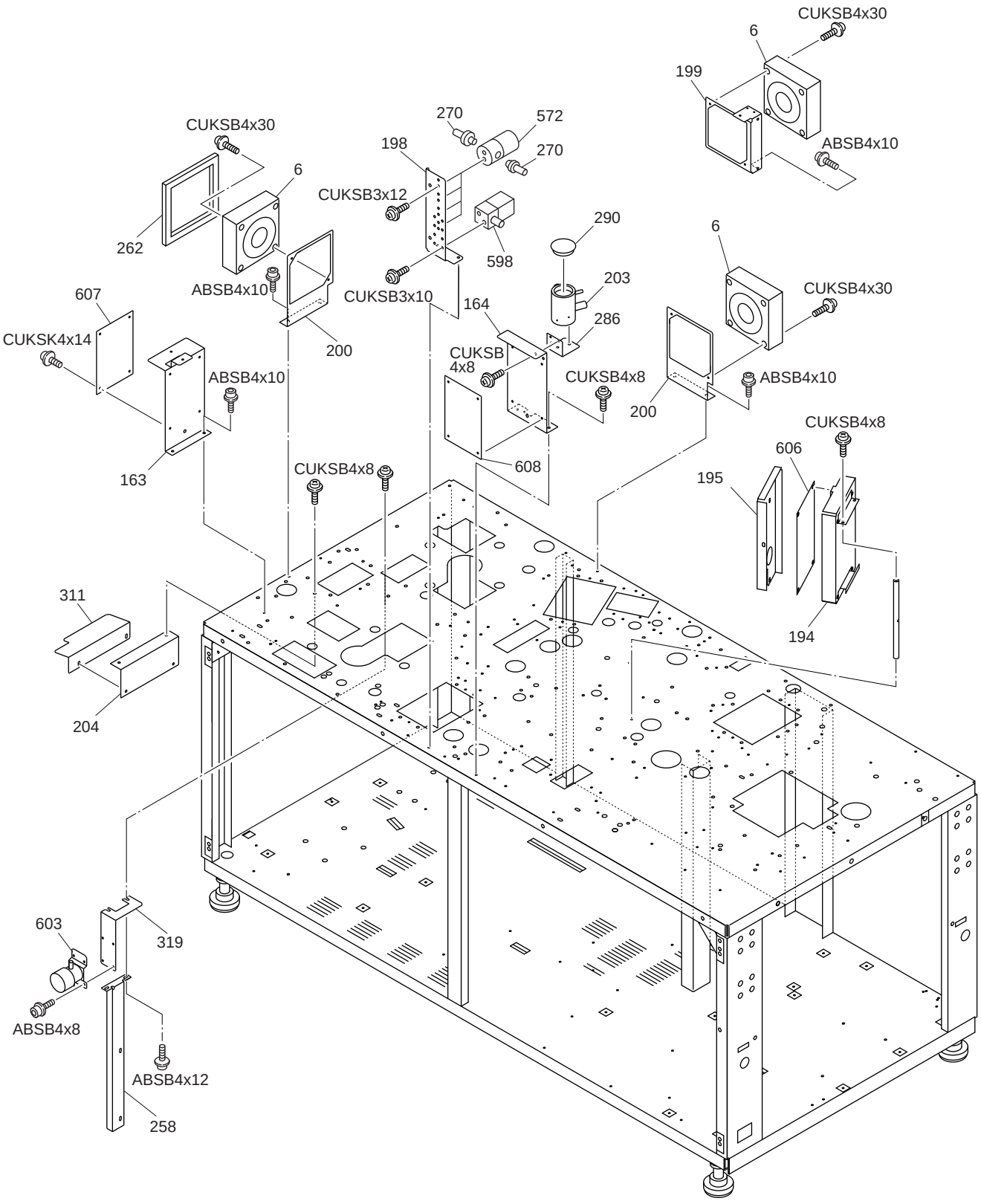


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	3/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

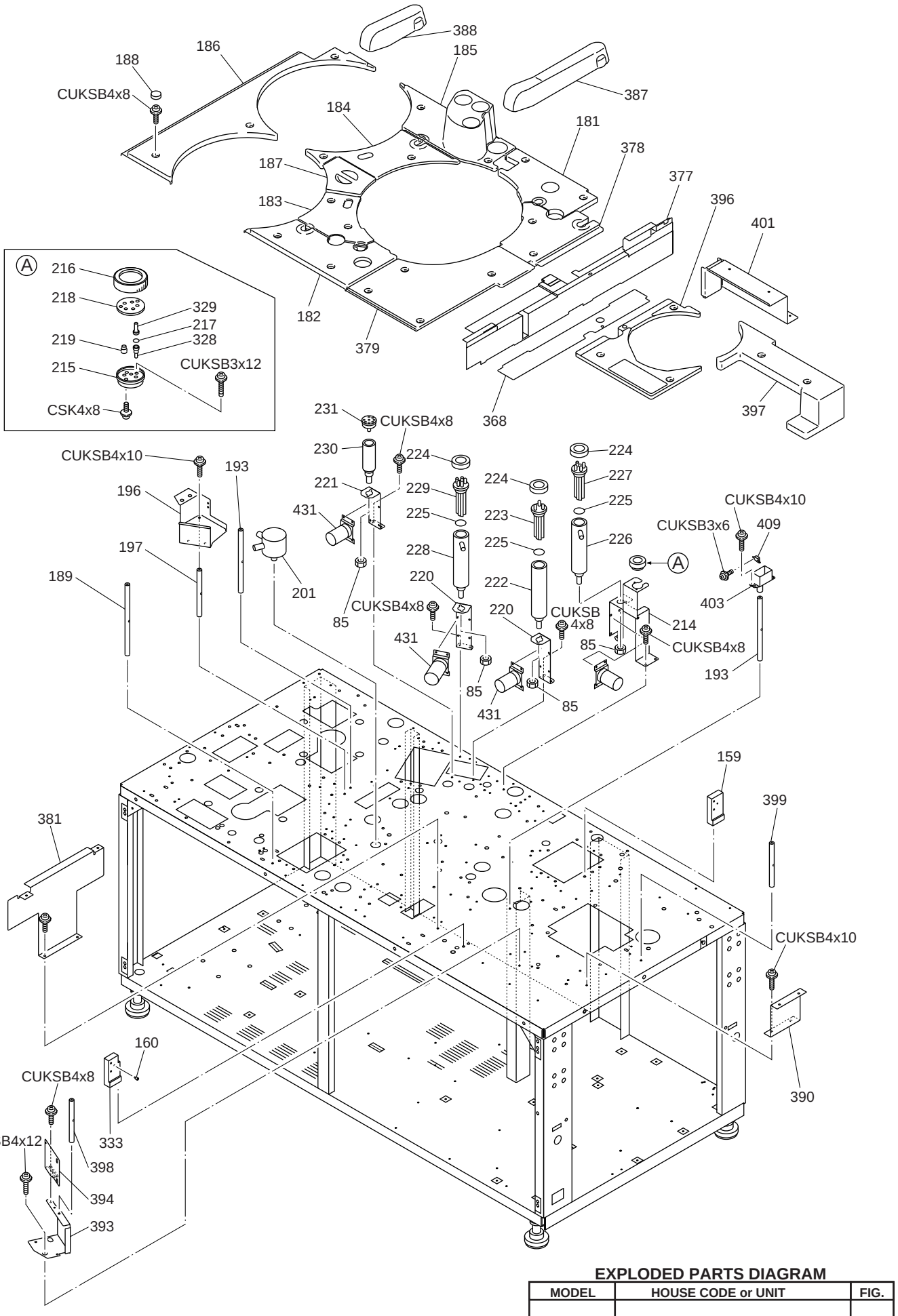


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	4/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

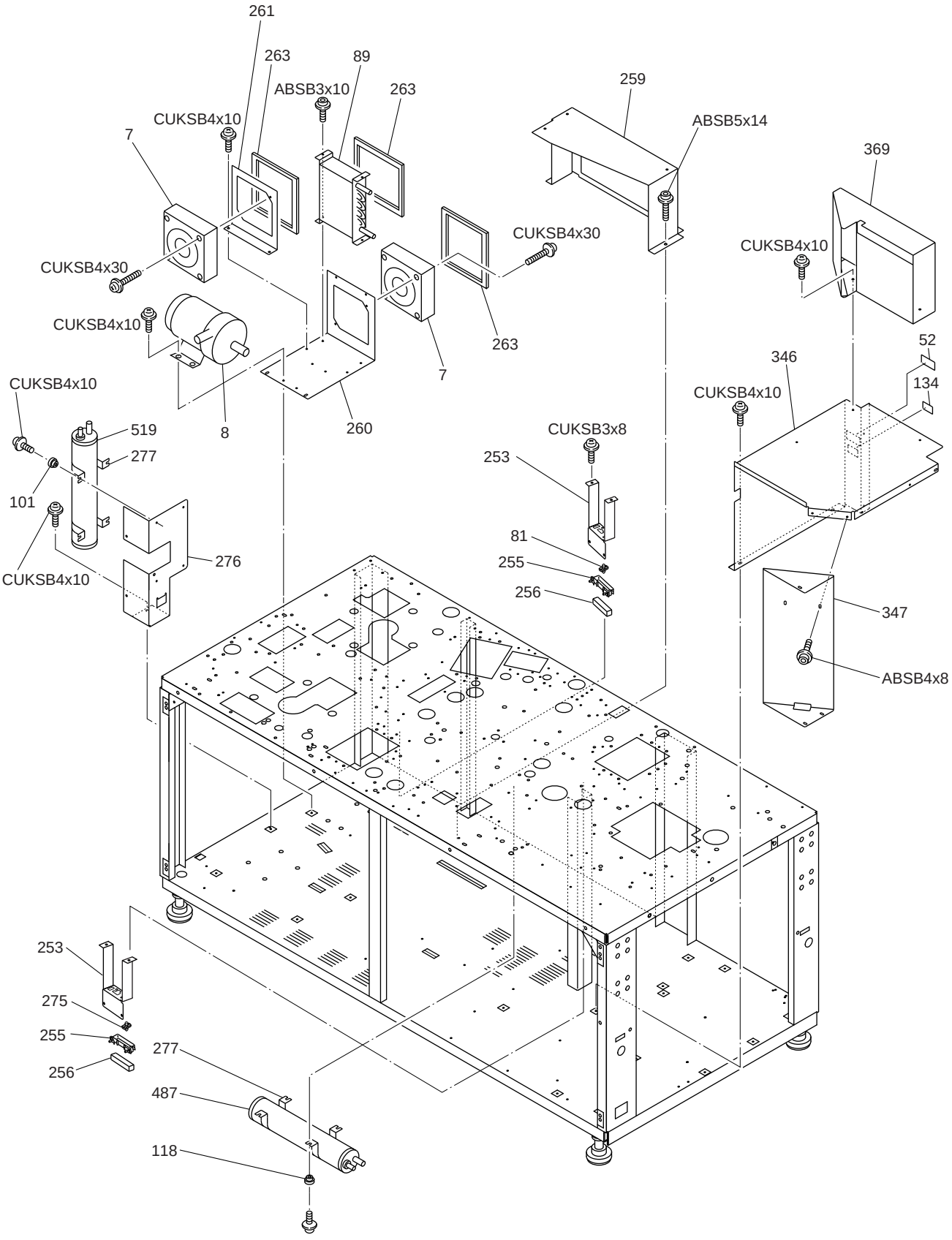


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	5/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

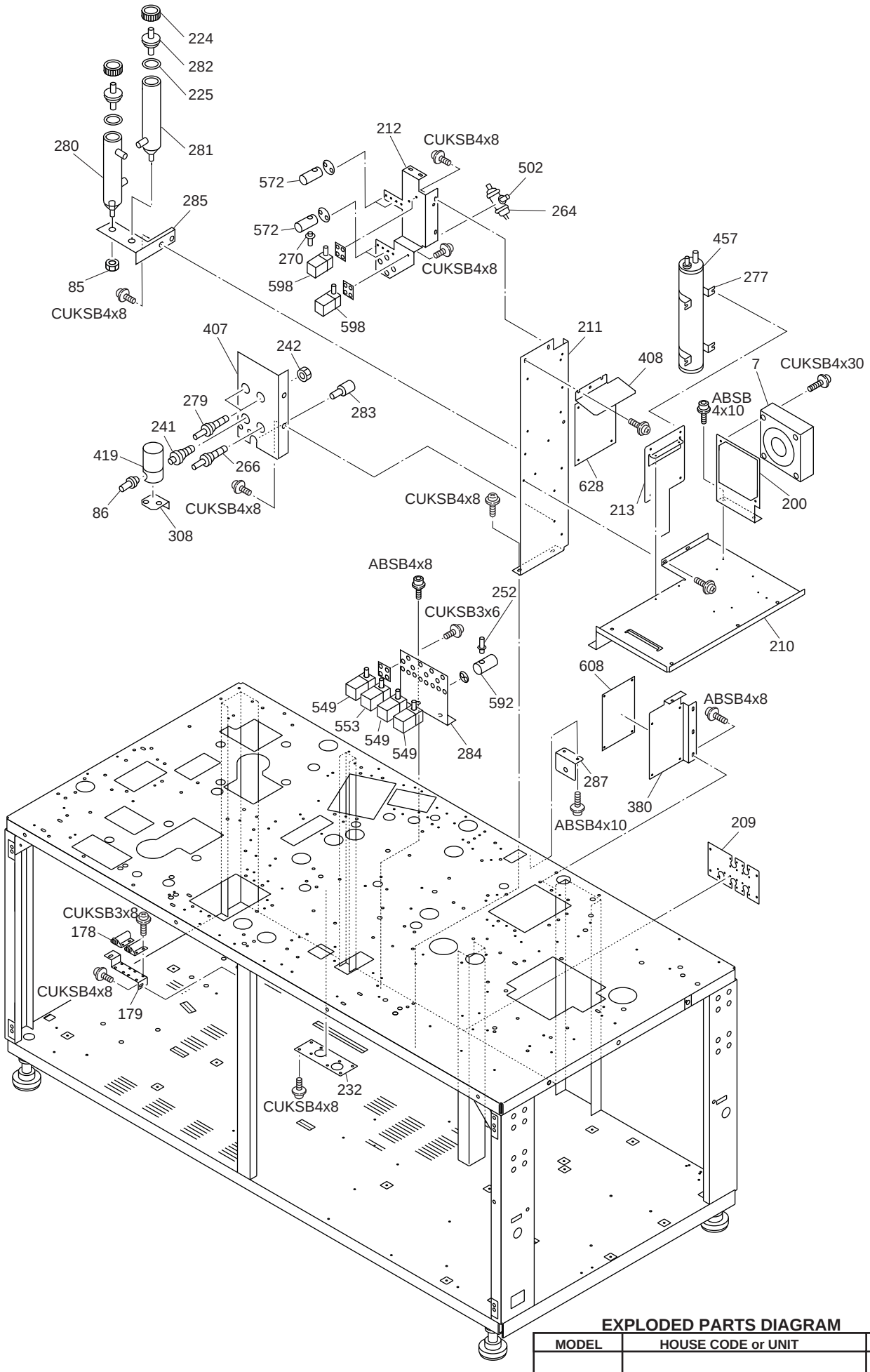


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	6/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

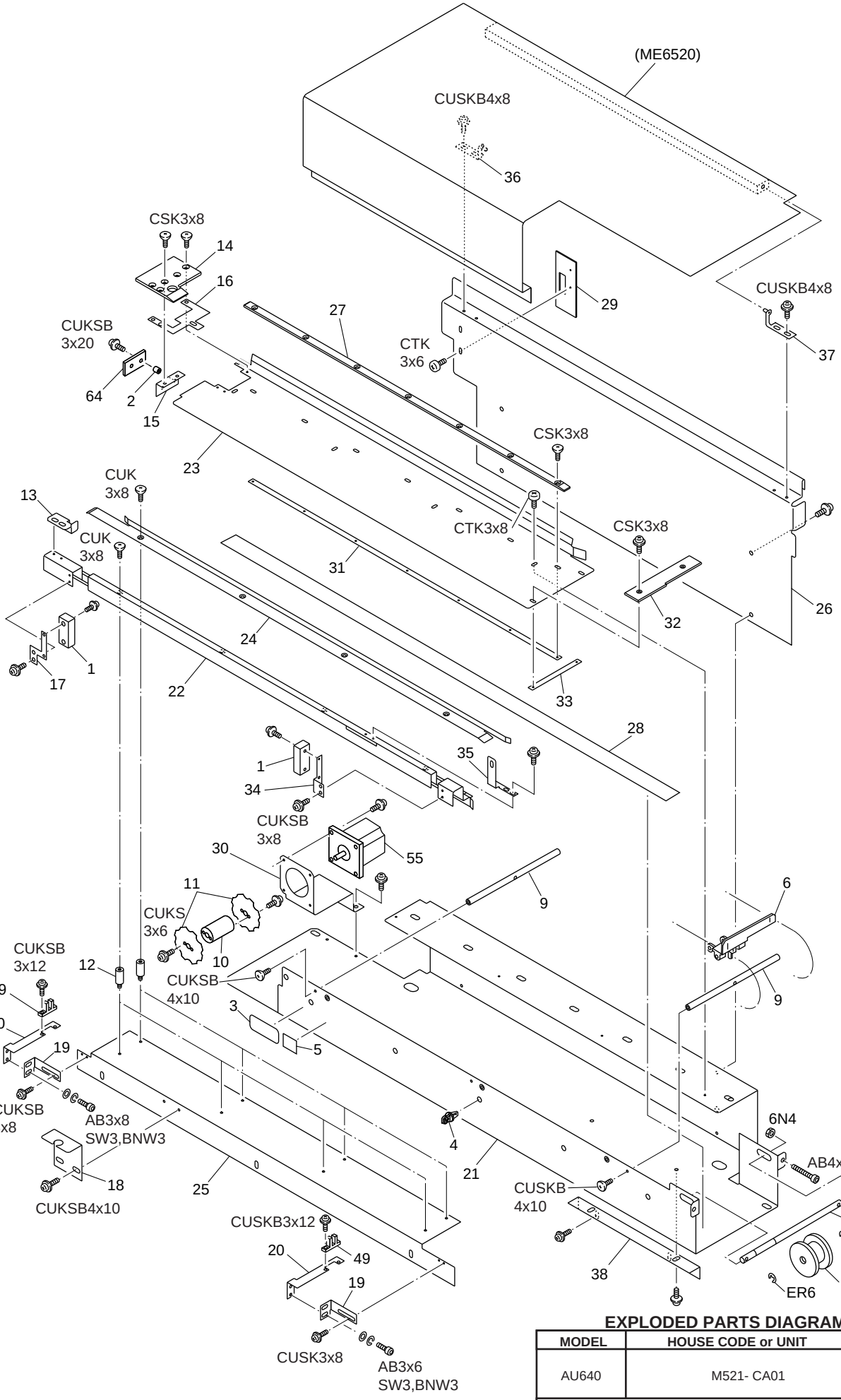


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-AA01	7/7
OLYMPUS OPTICAL CO.,LTD. TOKYO		

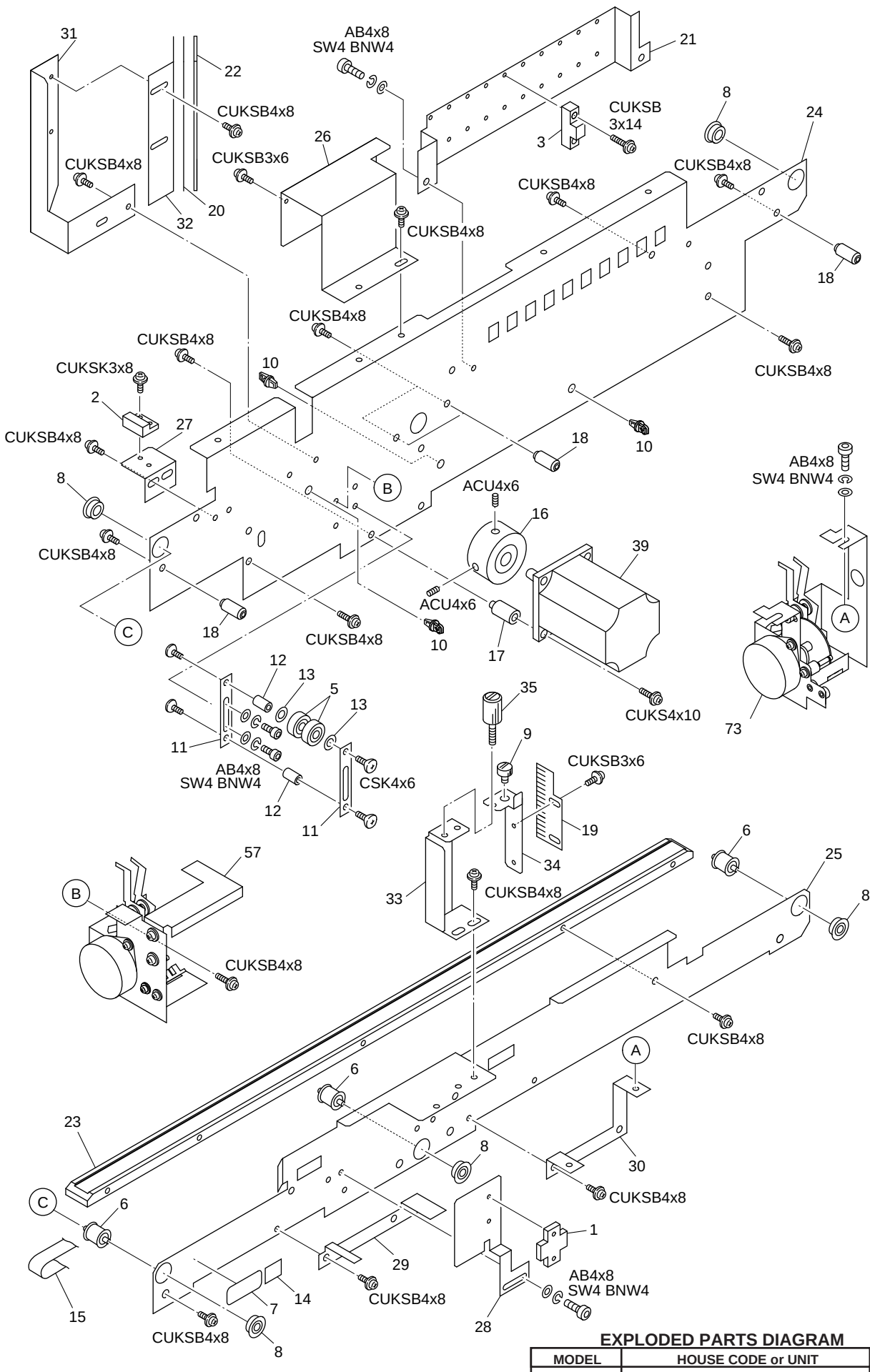
A B C D

1 2 3 4



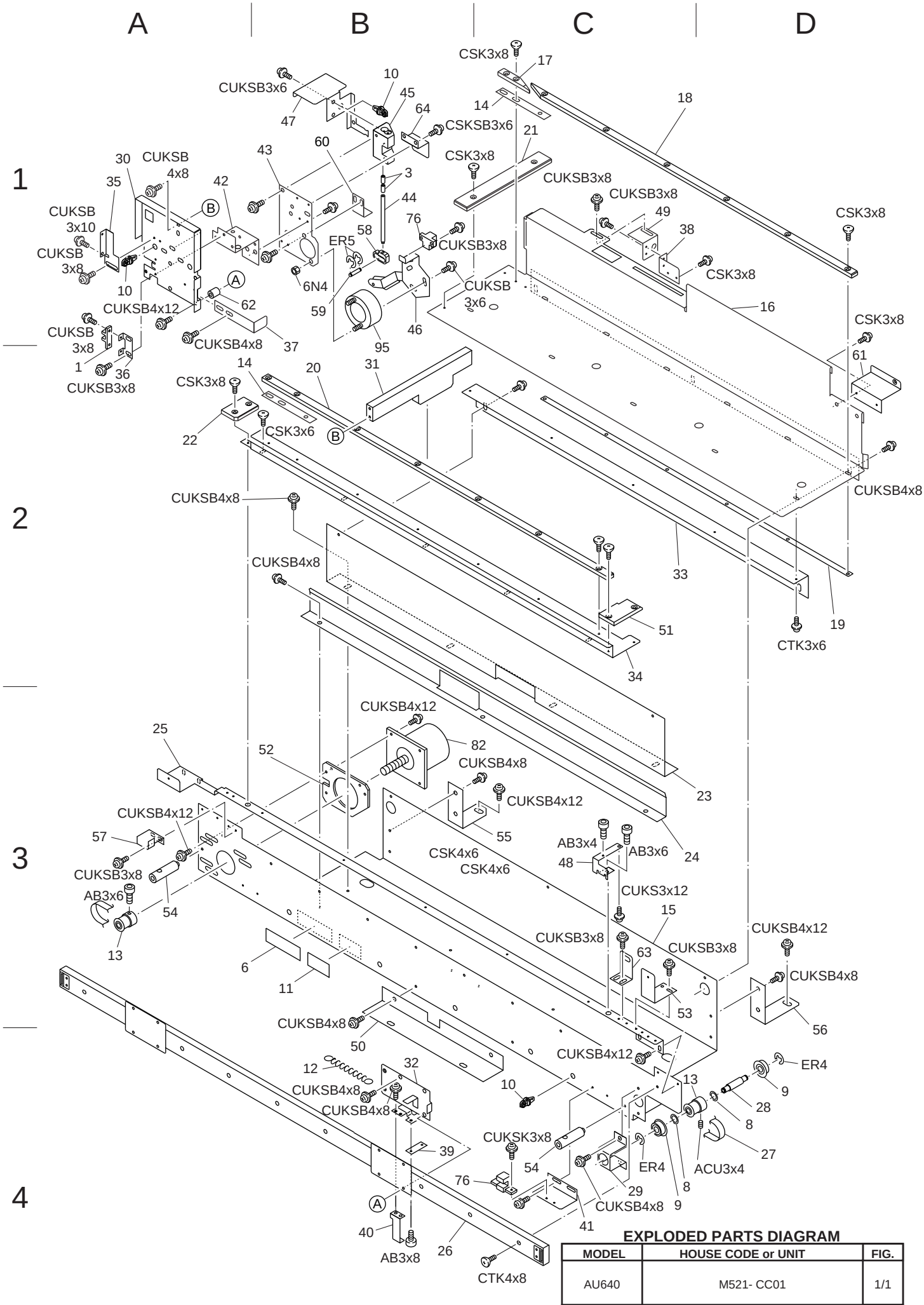
EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- CA01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-CB01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

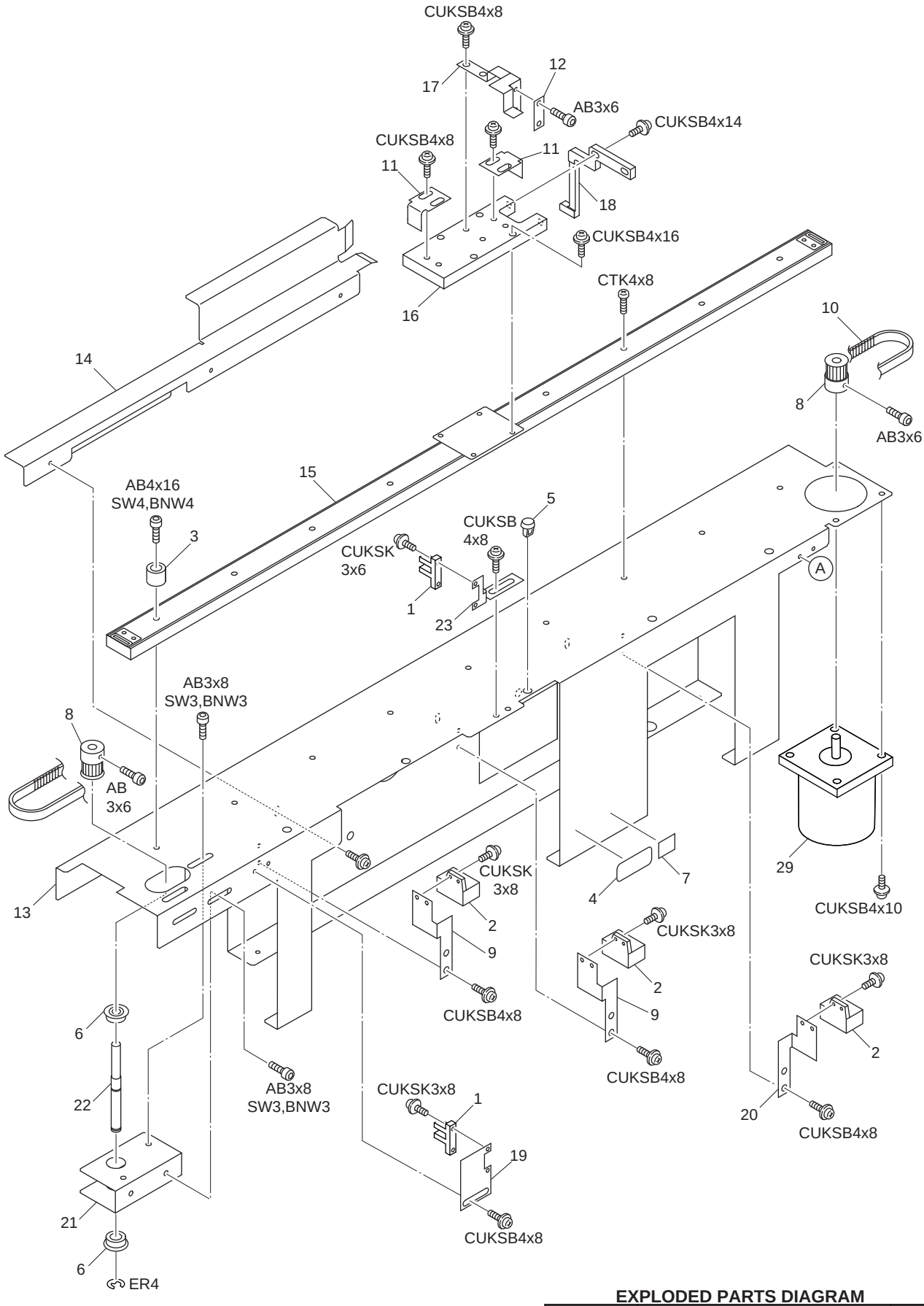


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- CC01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

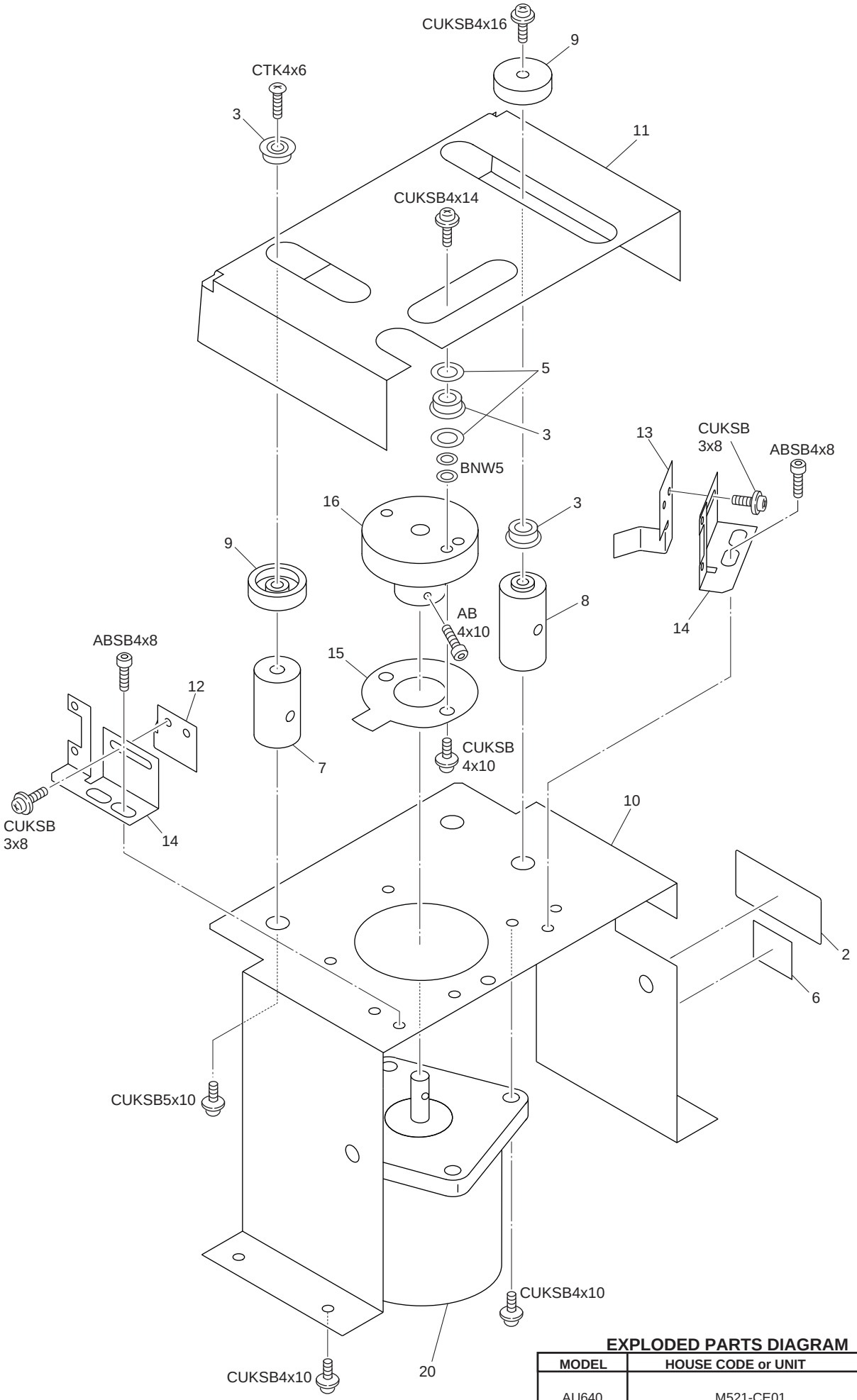


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-CD01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-CE01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

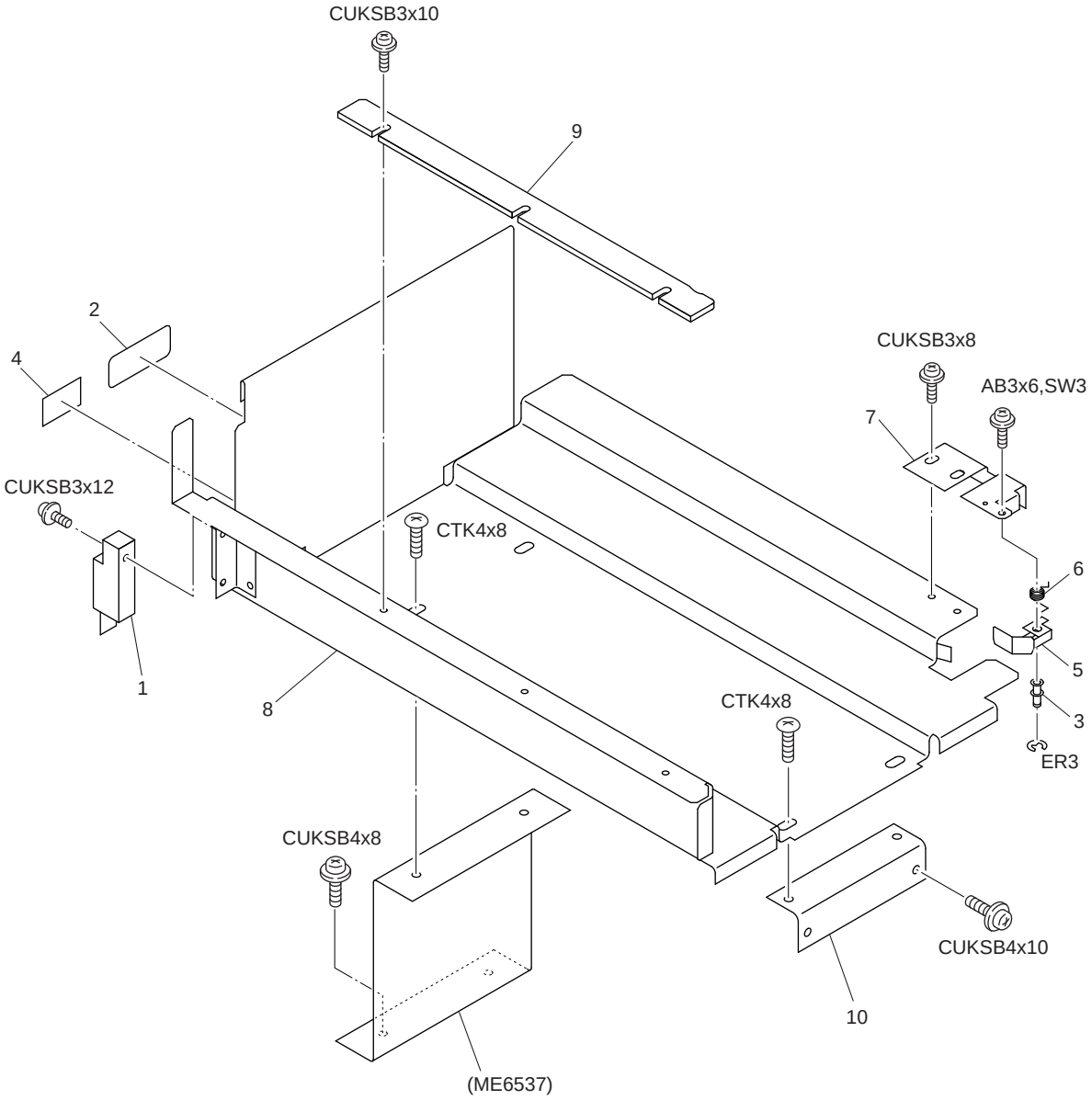
A B C D

1

2

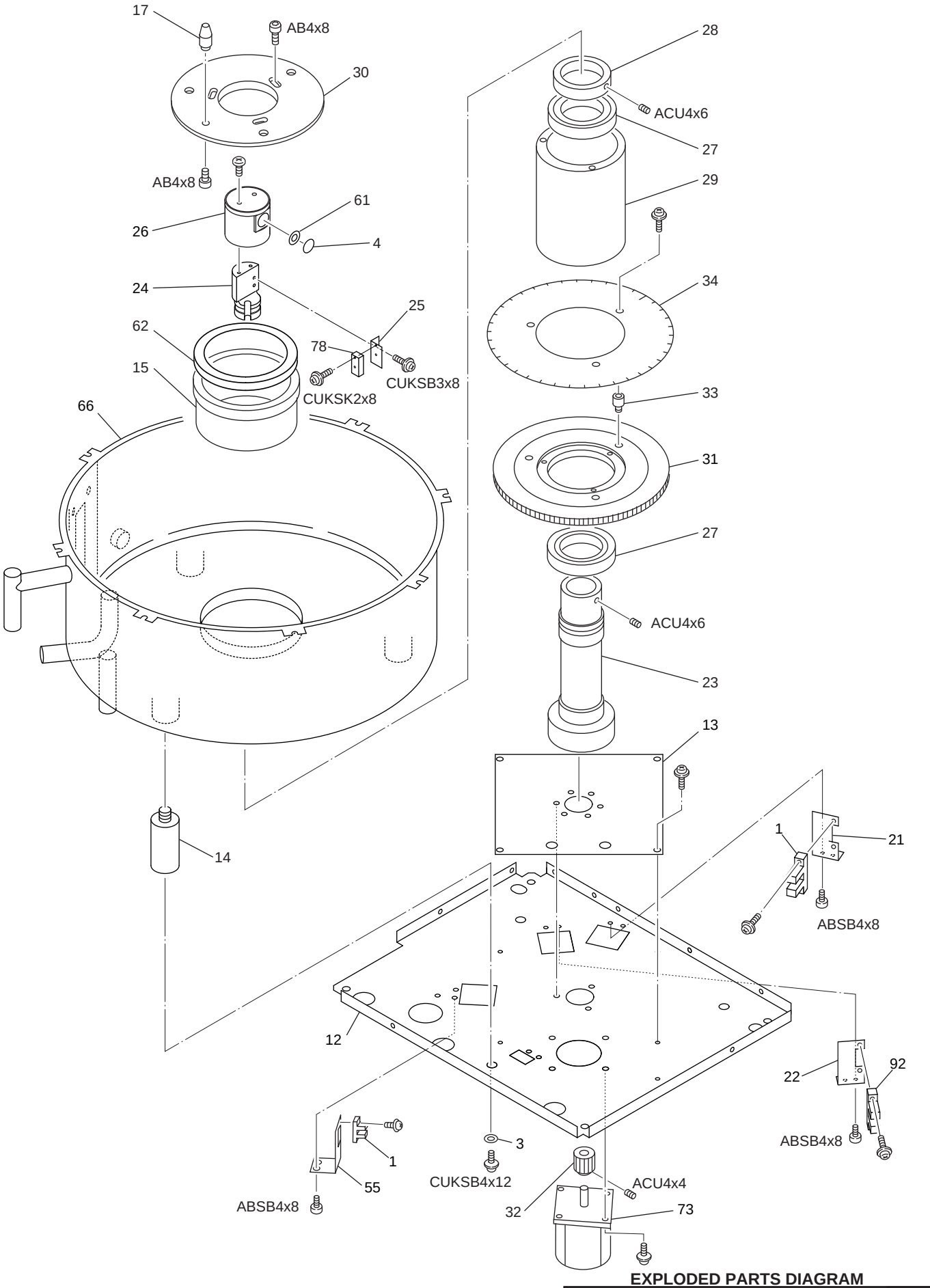
3

4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-CH01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

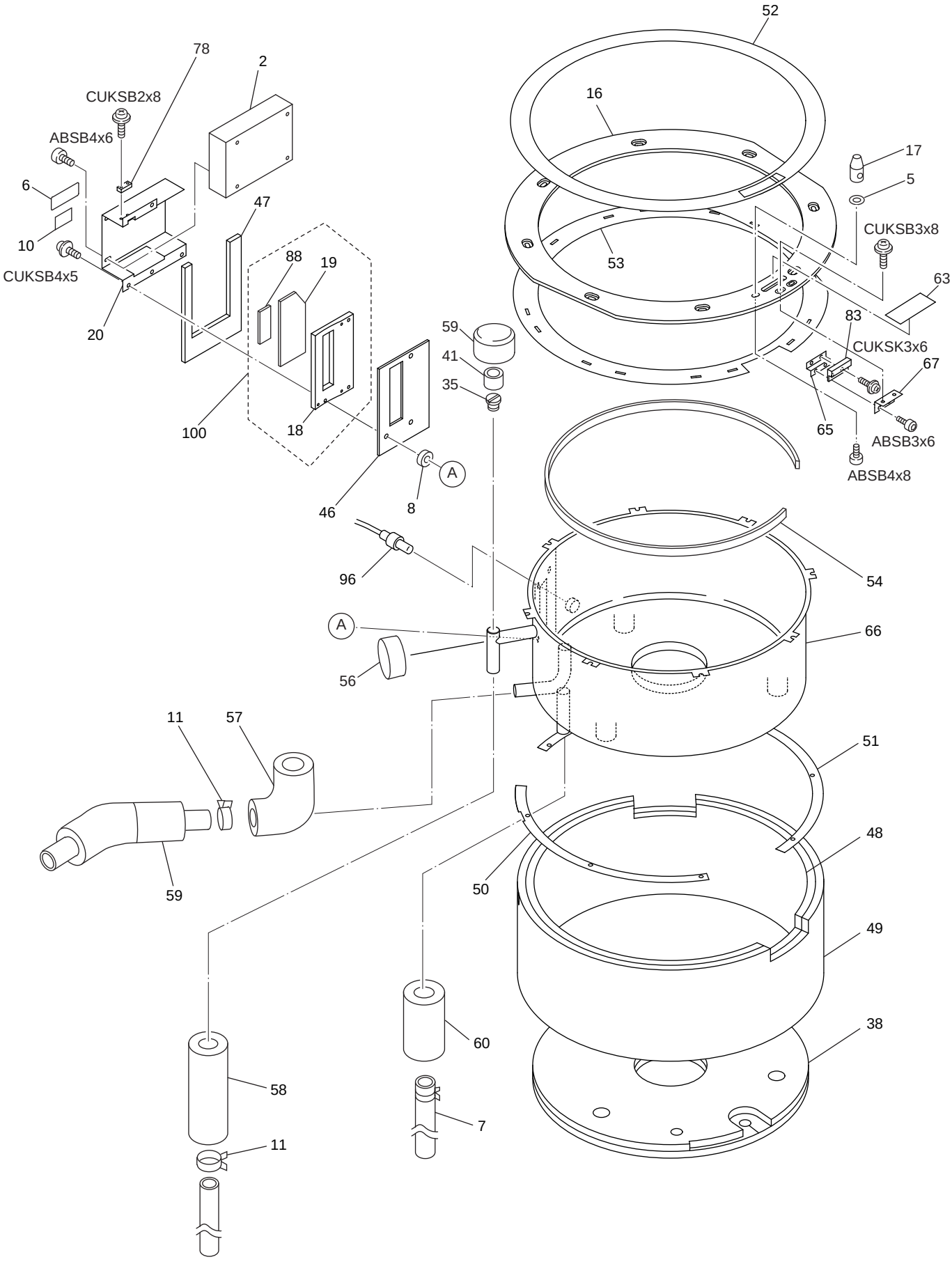


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- DA01	1/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

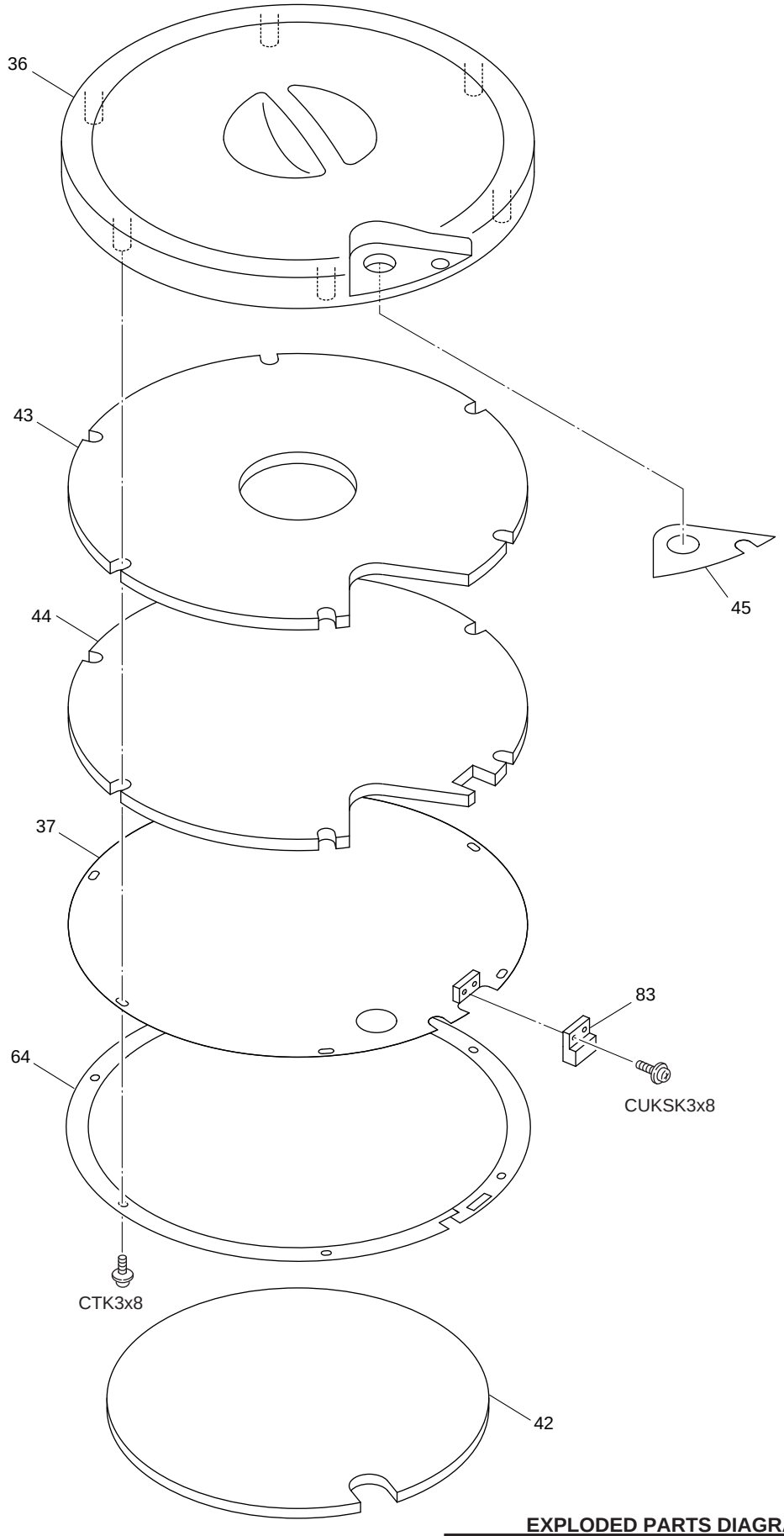


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-DA01	2/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

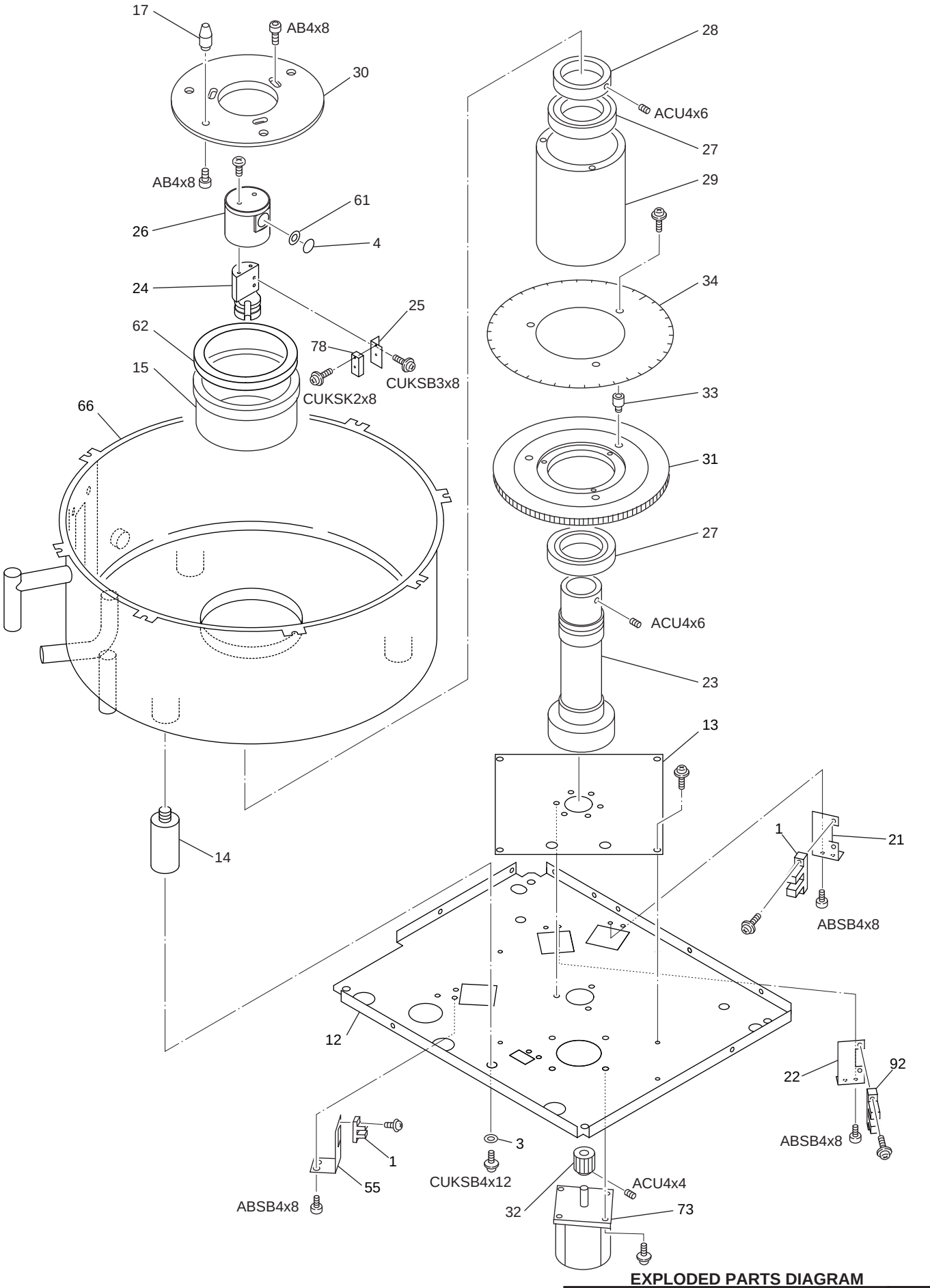
A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- DA01	3/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

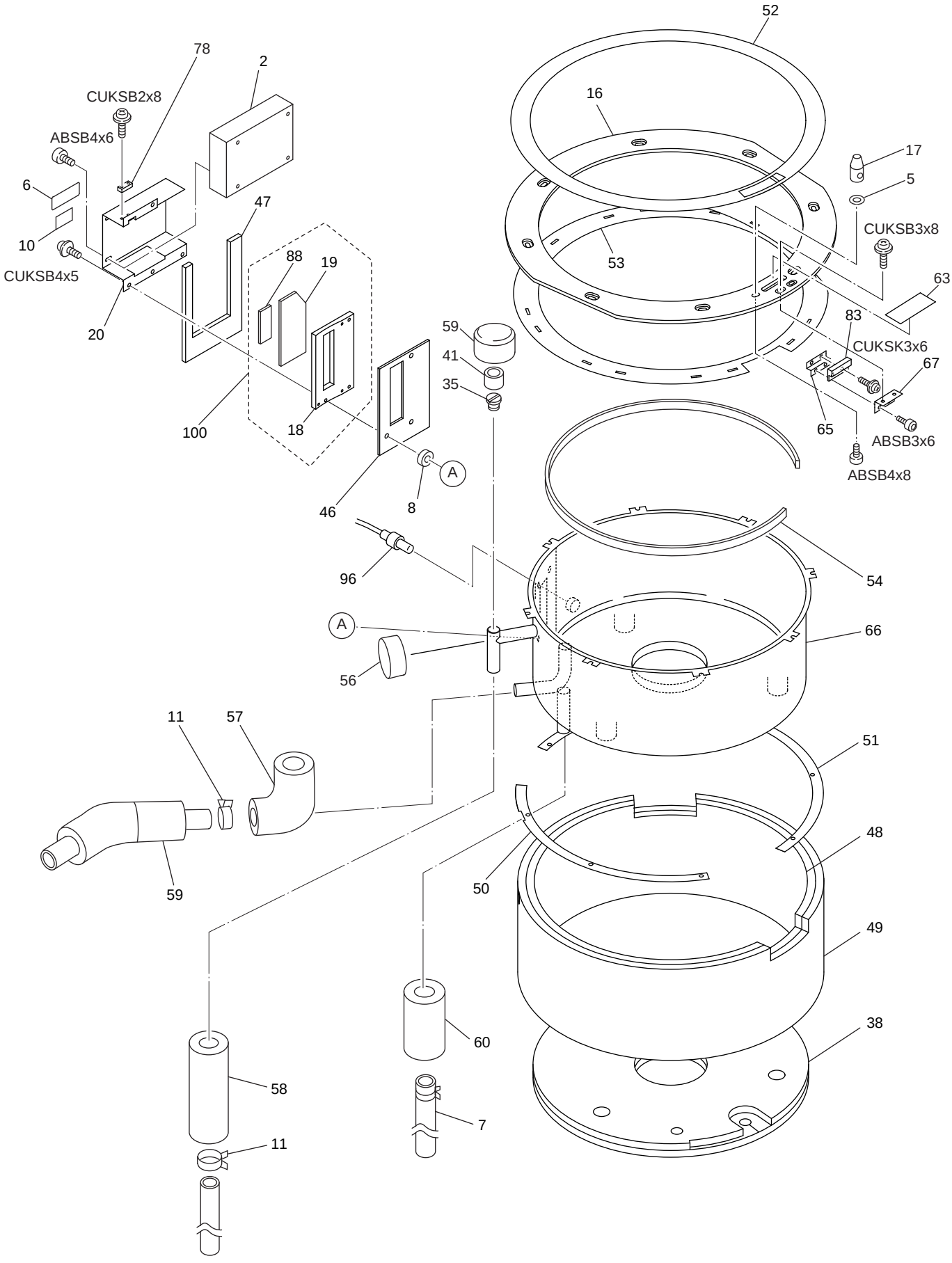


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- DA11	1/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

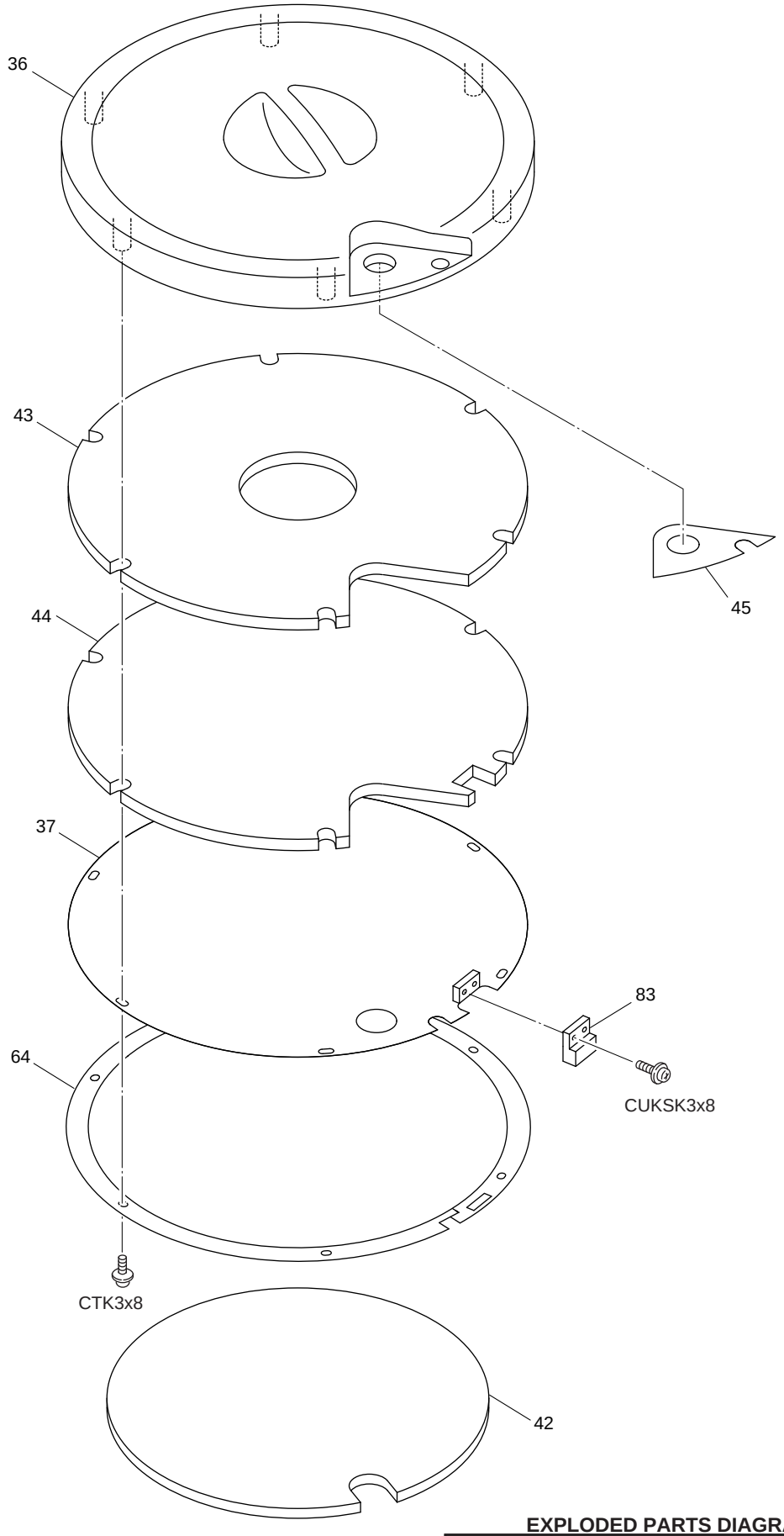


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-DA11	2/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

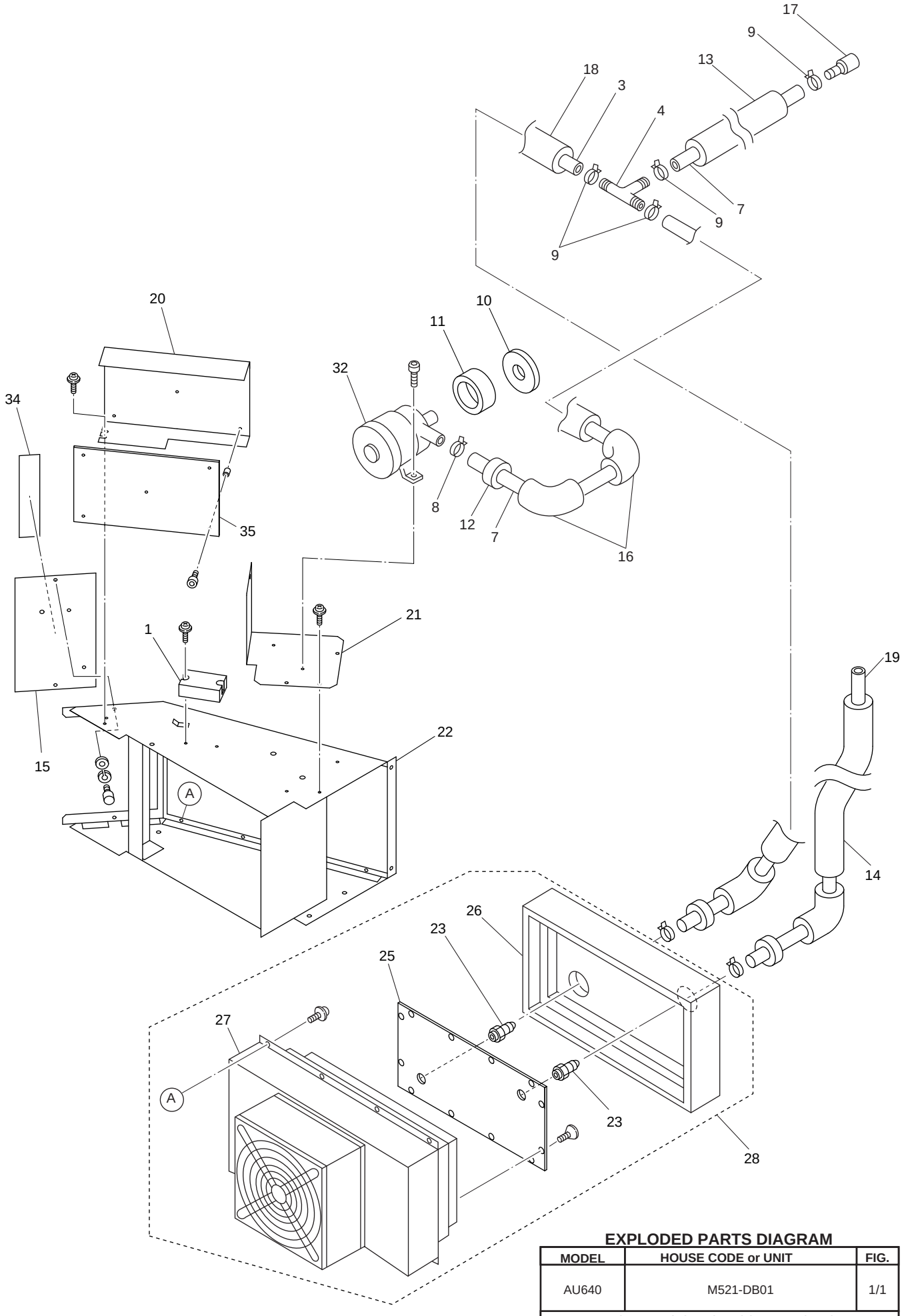


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- DA11	3/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

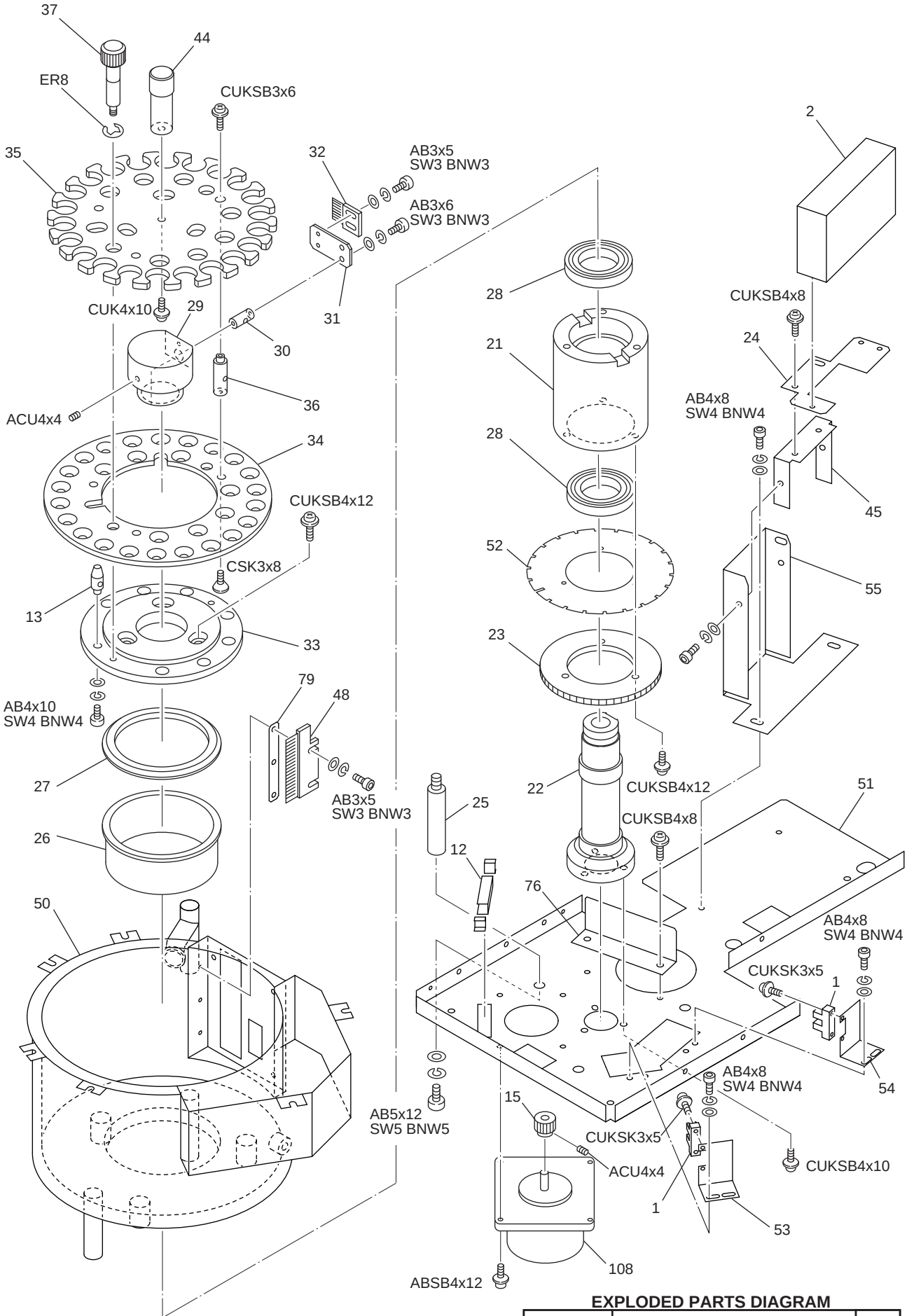


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-DB01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

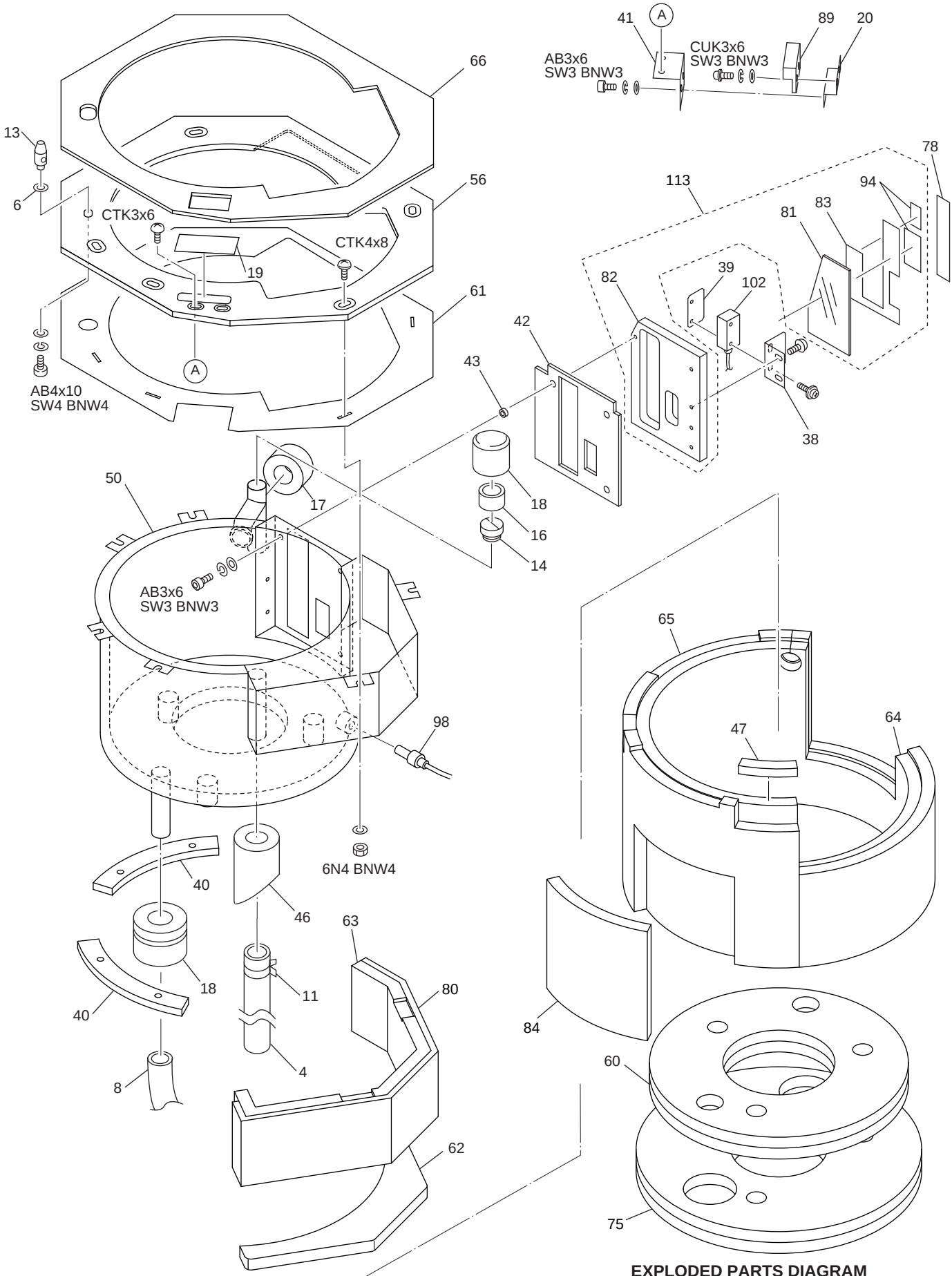


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-DC01	1/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

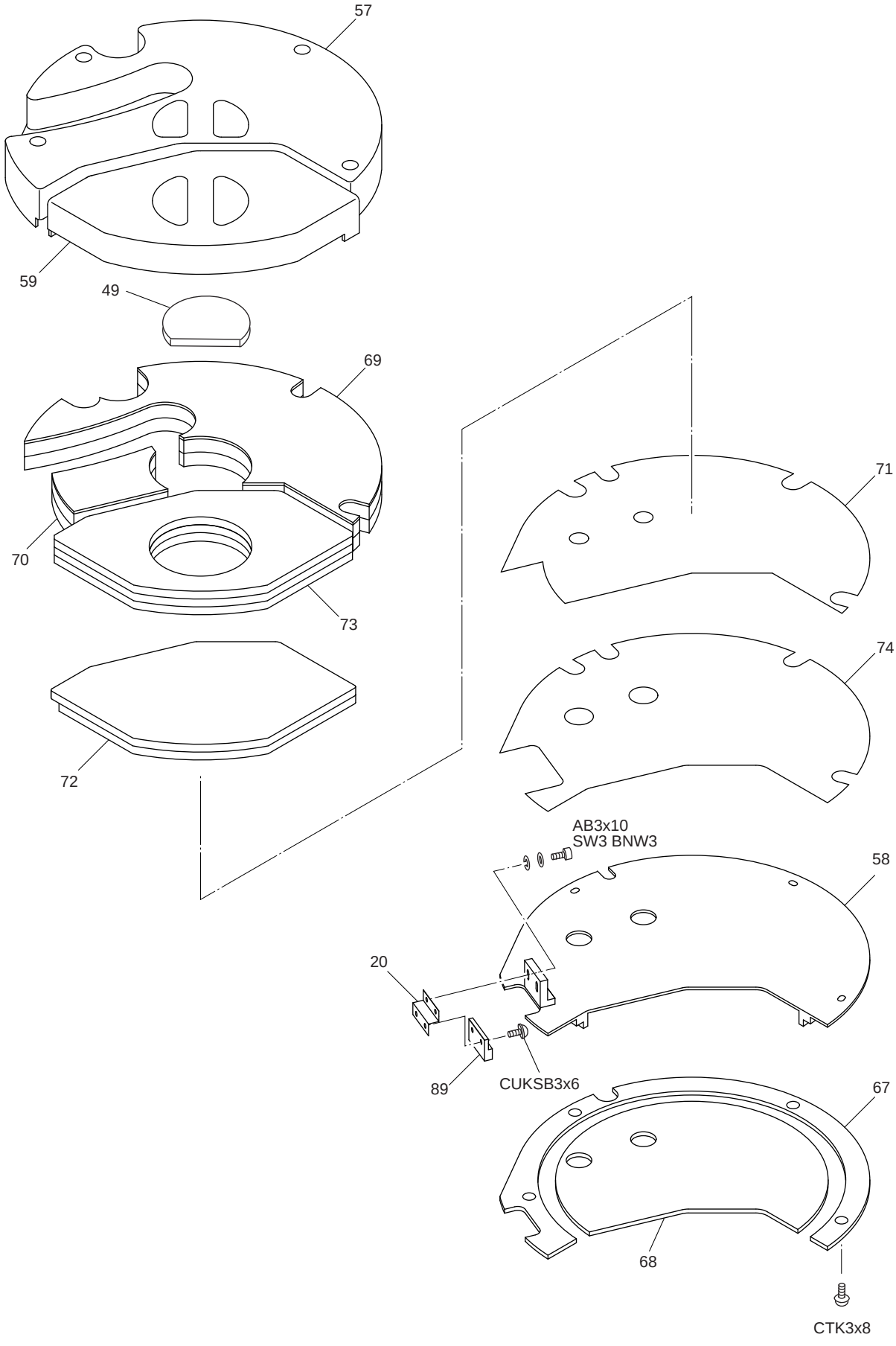


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-DC01	2/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

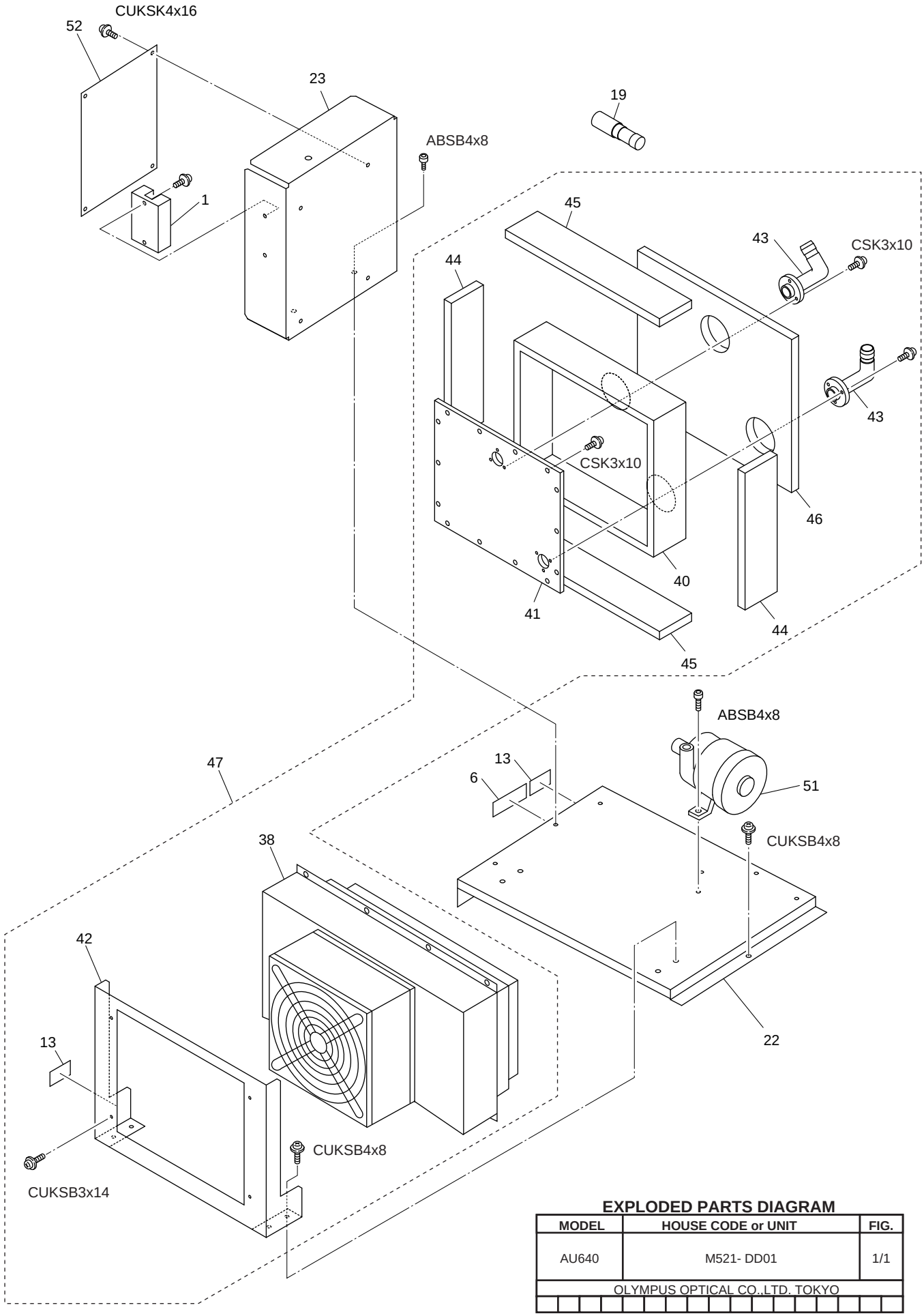


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG
AU640	M521-DC01	3/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

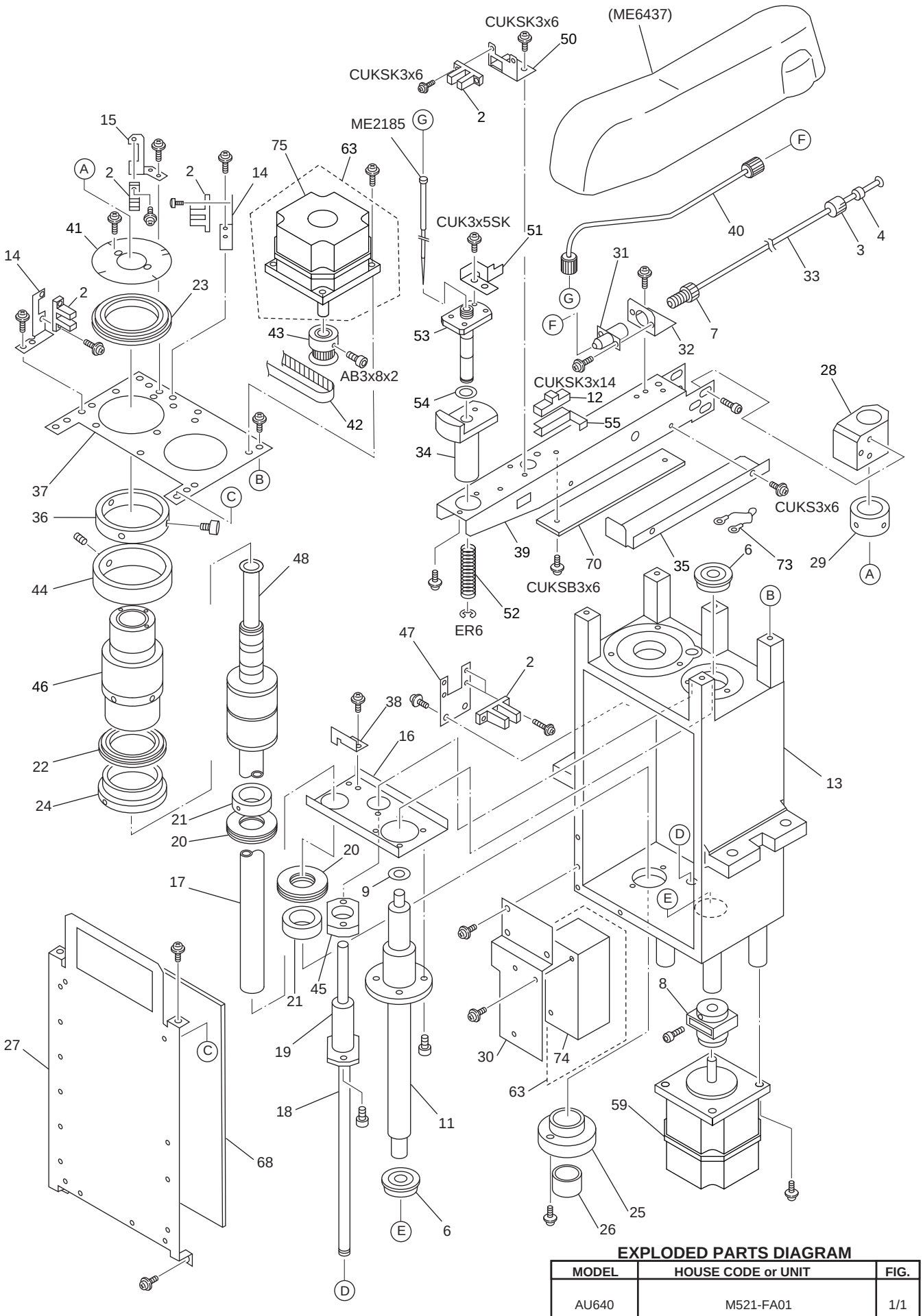
A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- DD01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

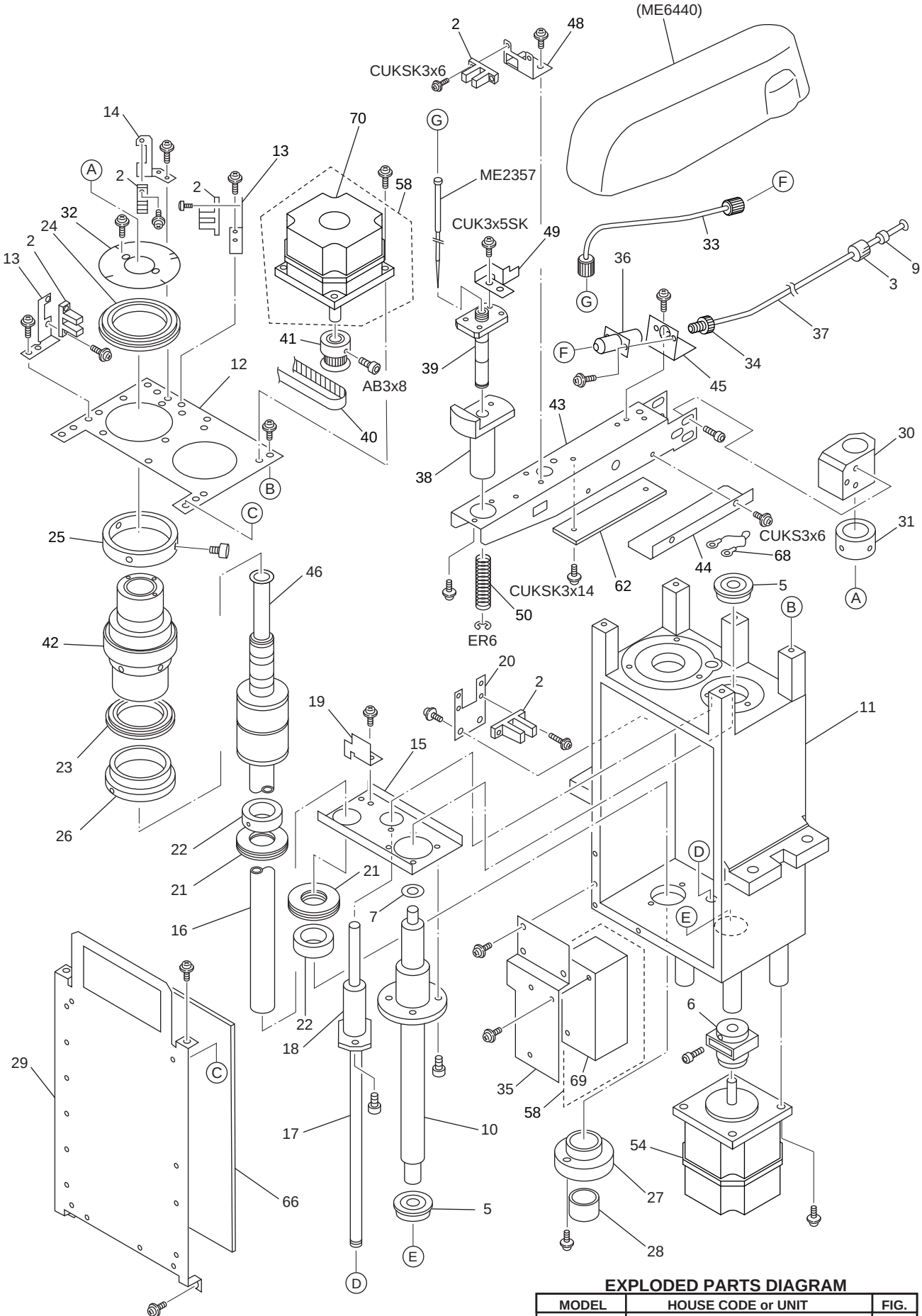


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-FA01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

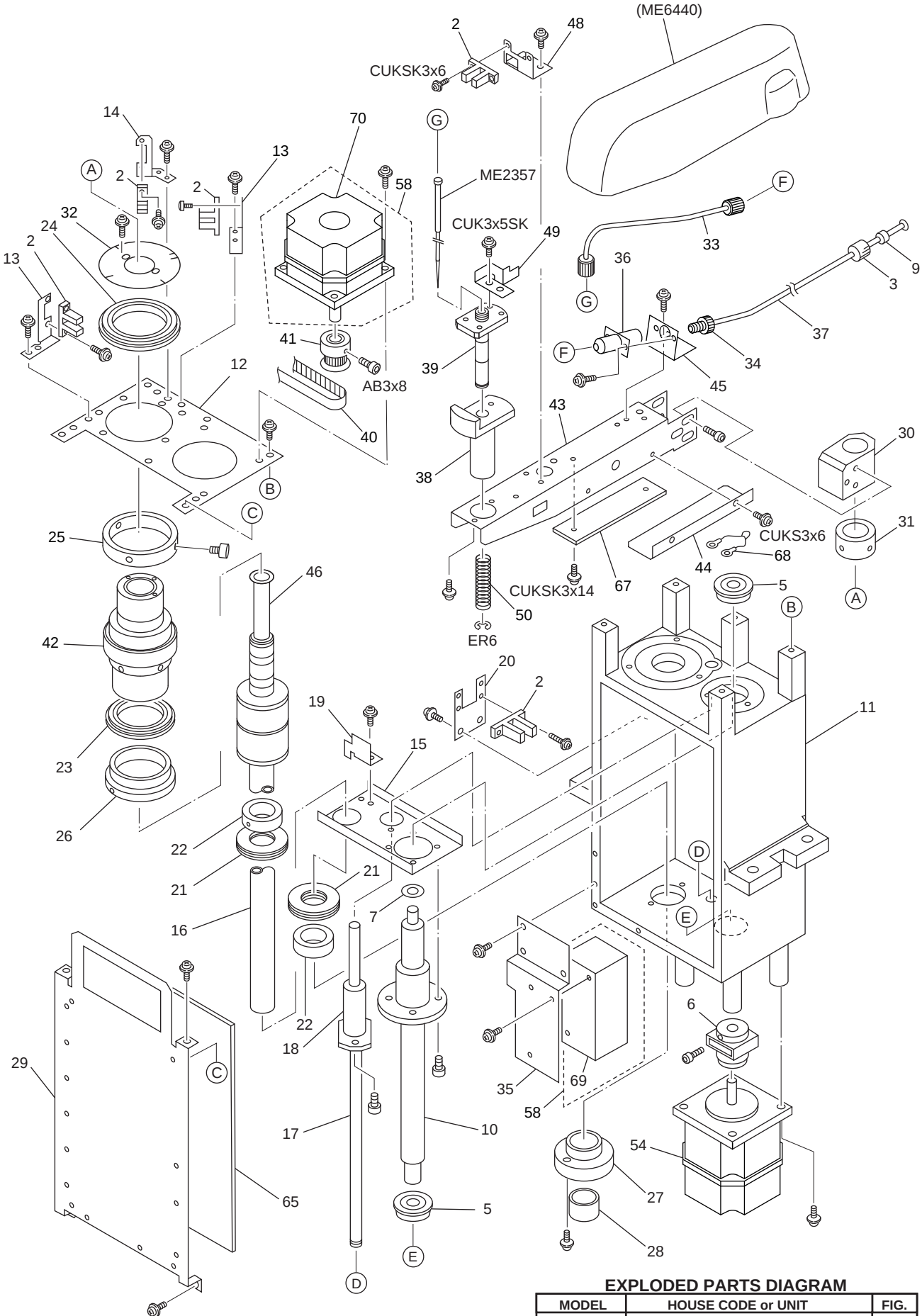


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-FD01	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

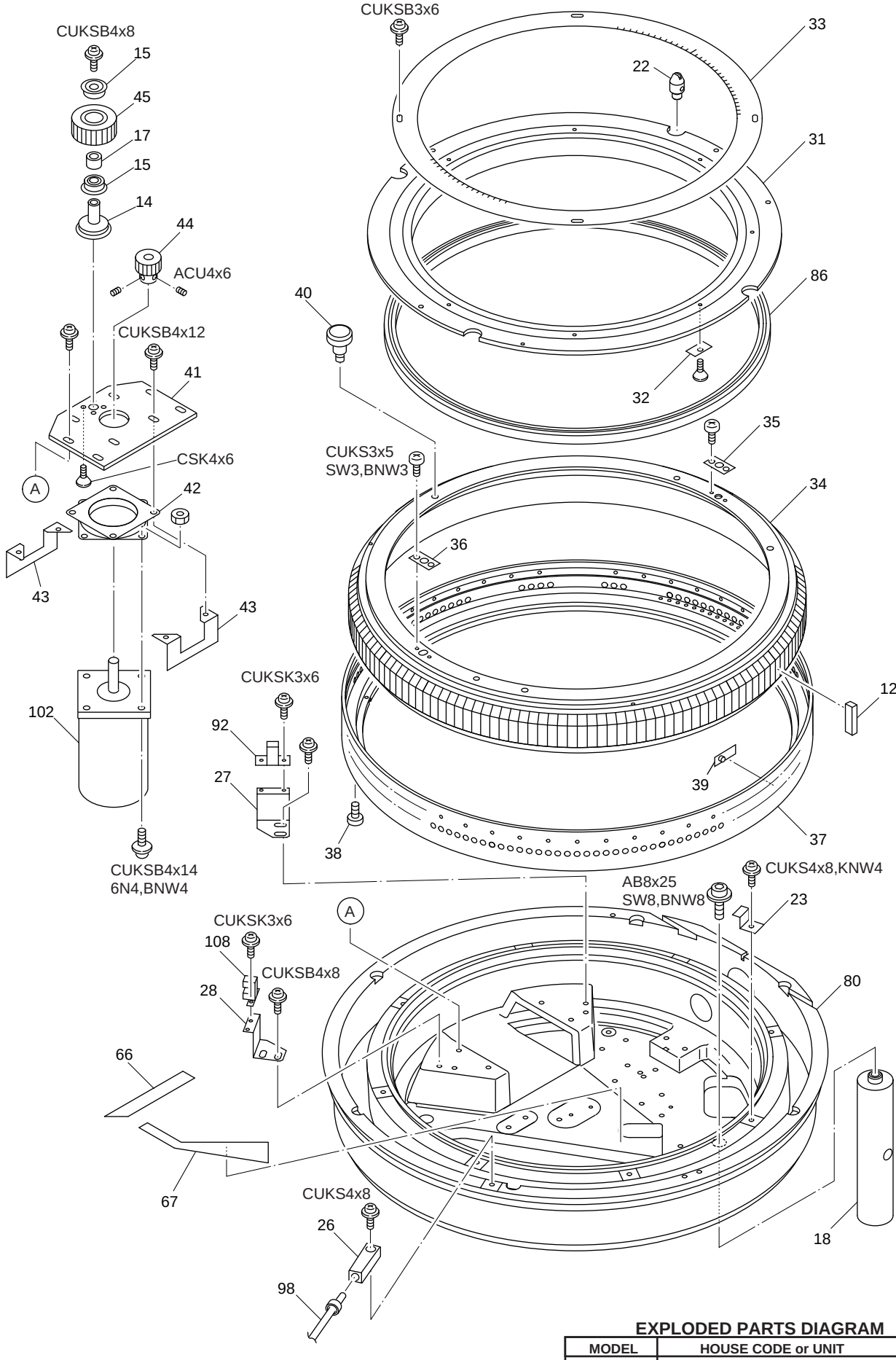


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-FD11	1/1
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

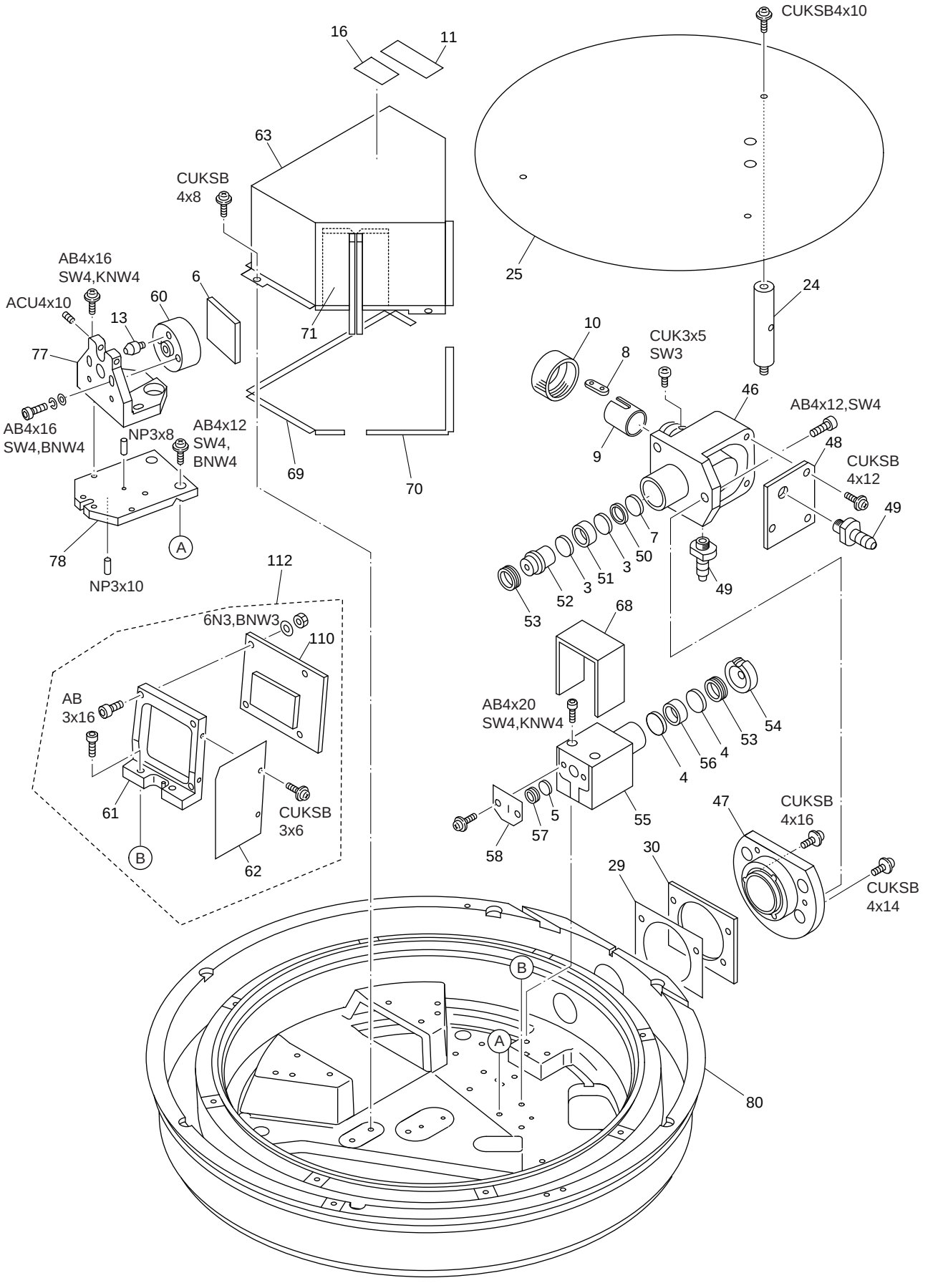


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- GA01	1/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

A B C D

1 2 3 4

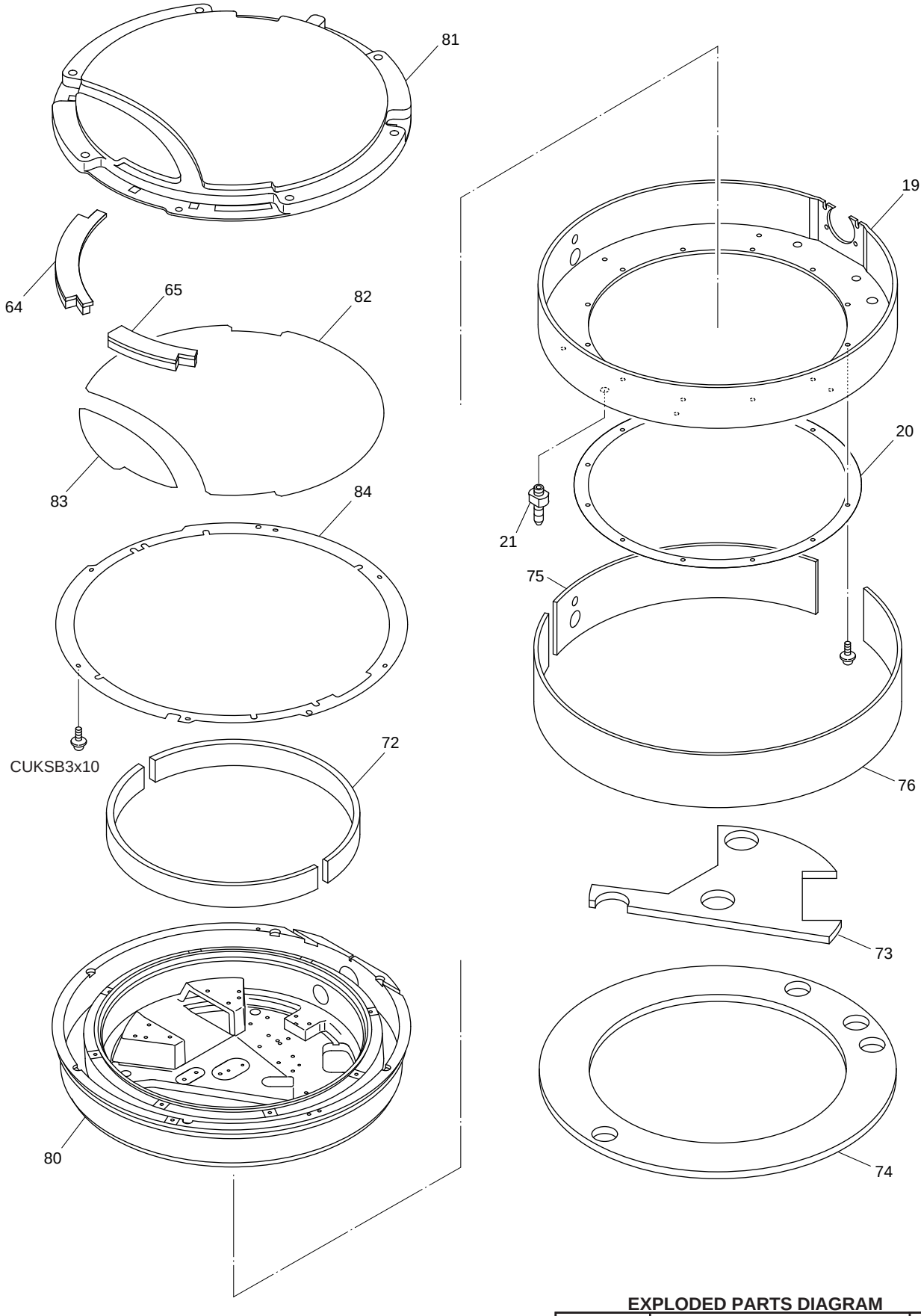


EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- GA01	2/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

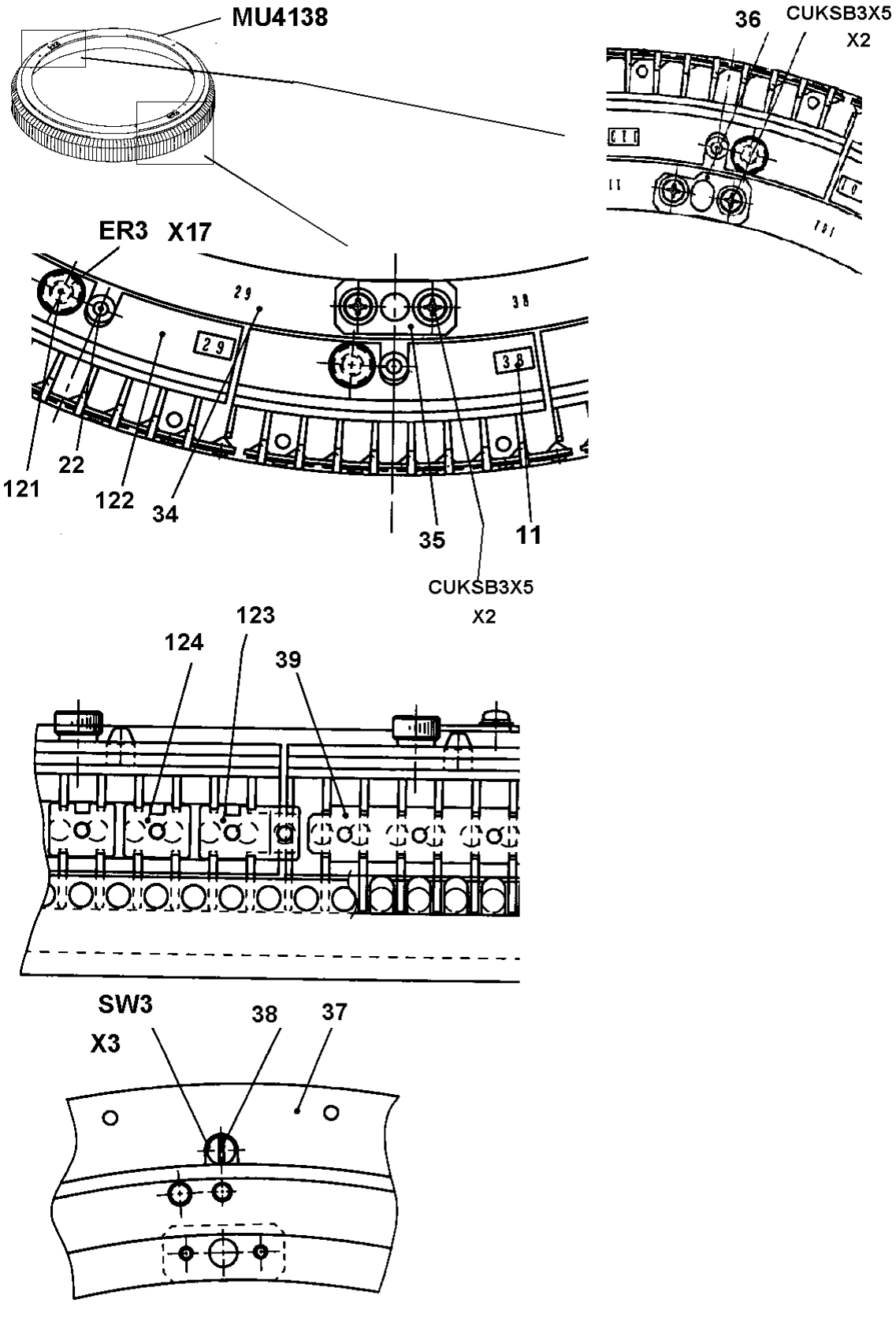
A B C D

1 2 3 4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521- GA01	3/3
OLYMPUS OPTICAL CO.,LTD. TOKYO		

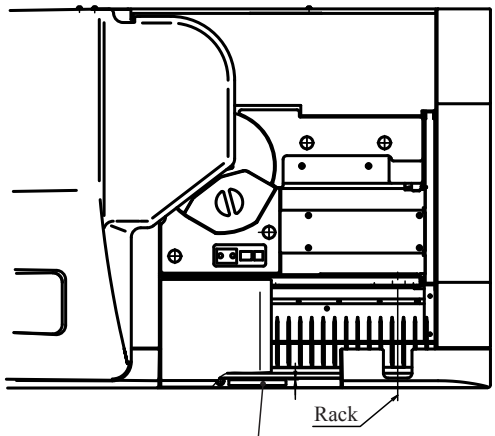


Refer to M521-GA01 to see another parts in GA11.

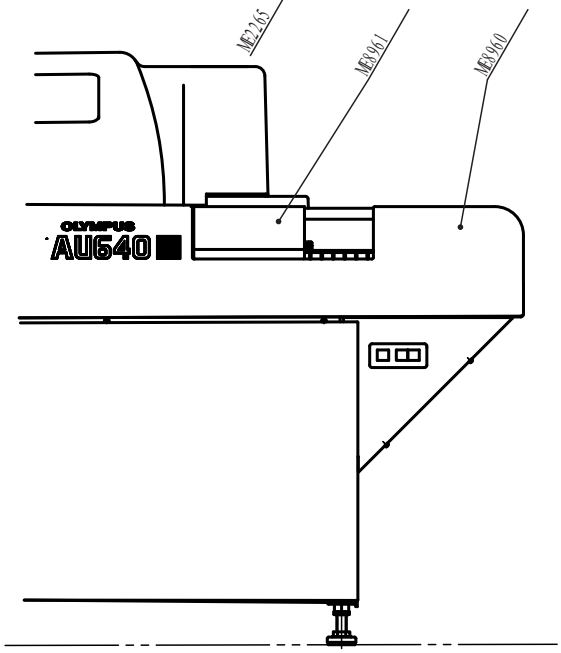
No.	MODEL	HOUSE CODE or UNIT	FIG
	AU640	Cuvette ring ass'y of M521-GA11	1/1
OLYMPUS OPTICAL CO.,LTD TOKYO, JAPAN			

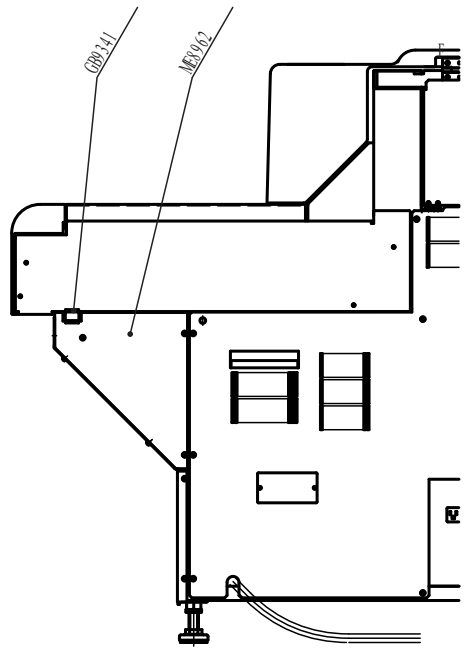
A B C D

1

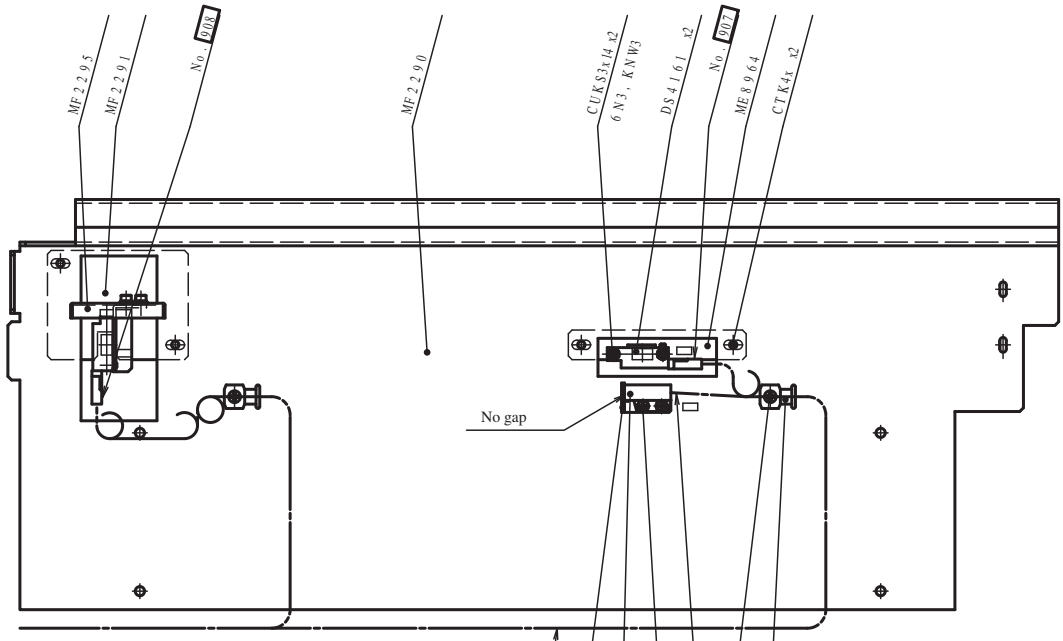


2

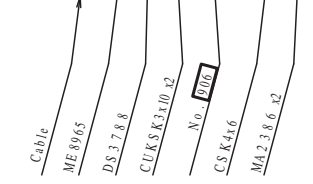




3



4



EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-OPG01	1/2
OLYMPUS OPTICAL CO., LTD. TOKYO		
		1300 0700

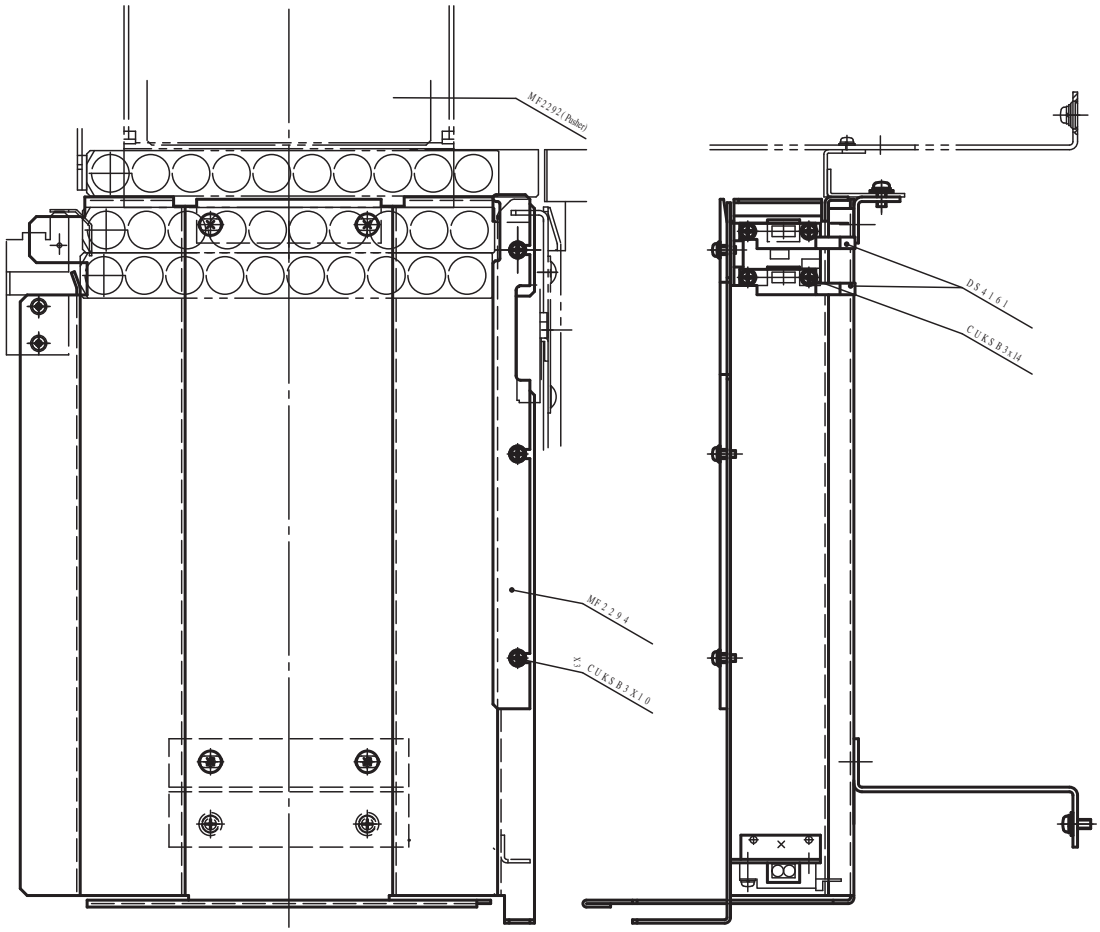
A B C D

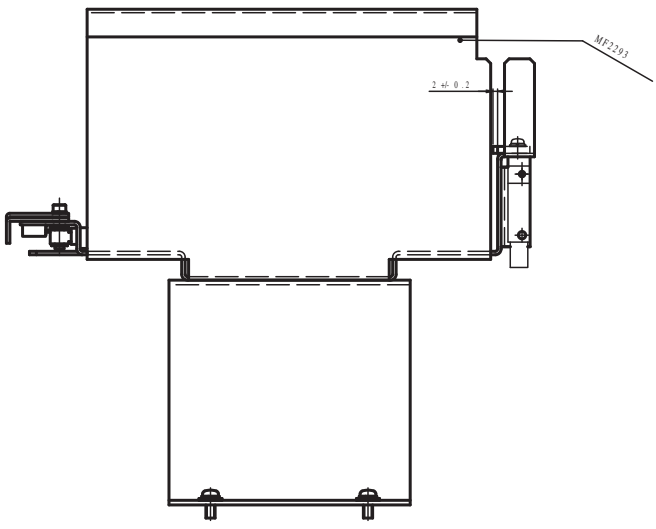
1

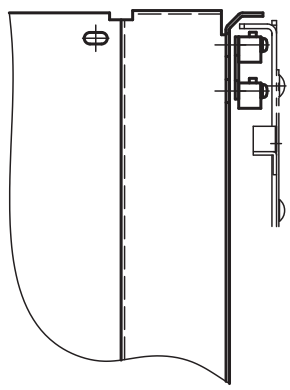
2

3

4







EXPLODED PARTS DIAGRAM

MODEL	HOUSE CODE or UNIT	FIG.
AU640	M521-OPG01	2/2
OLYMPUS OPTICAL CO., LTD. TOKYO		

1300

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M014-BA02(MU3545)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			MA2561		Name plate	1							
2			MA3377		Spacer	4							
3	MB7277	P	MB7277		Bearing	8							
4			MB9808		EC label	1							
5			MD7473		Roller	4							
6	MD7475	P	MD7475		Bearing B	1							
7			MD9871		Base plate	1							
8			MD9872		Roller	1							
9			MD9873		Roller plate	2							
10			MD9874		Guide plate	1							
11			MU3259		014 P pump	1	DH128900		Connector pin	6			
12			MU3259		014 P pump	1	DK119100		Housing	1			
13			MU3259		014 P pump	1	DM158400		Motor	1			
14	MU3259	P	MU3259		014 P pump	1	MU3259#			1	BA pulse motor		
15			MU3545#		M014-BA02								

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M014-EF01(MU3223)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			MA1880		Mouthpiece plate	4							
2			MA1881		Mouthpiece	4							
3			MA1882		R pipe	2							
4			MA1884		R block	1							
5			MU3223#		M014-EF01								

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M016-AA01(MU5493)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			GB5739		Rubber tube	2							
2			GB6575		Fixing screw	8							
3			GB7510		Tube	2							
4			GB8169		Rubber bush	1							
5			MA2461		Grommet	2							
6			MA2561		Name plate	1							
7			MA3502		Tube	1							
8	ZM1131	C	MA3627		Joint	5					Silicon tube 1x3x20		0400
9			MA3669		Spacer	1							
10			MA3746		Mark band	1							
11			MA3753		Mark band	1							
12			MA3756		Mark band	1							
13			MA3779		Washer	1							
14			MA4778		Tube	1							
15			MA4785		Tube	1							
16			MA4818		Mark band	2							
17			MA7092		Nut	1							
18	MB0024	P	MB0024		T joint	4					Silicon tube 2x4x20		
19			MB0153		Tube	1							
20			MB0205		Tube	1							
21			MB0975		Mark band	1							
22			MB1483		Mark band	1							
23			MB1485		Mark band	1							
24			MB1973		Cord fixer	2							
25			MB2992		Tube	1							
26			MB4028		Pillar	2							
27			MB7984		Mark Band	2							
28			MB7985		Mark Band	1							
29			MB8354		Tube	1							
30			MB8359		Tube	1							
31			MB8360		Tube	1							
32			MB8364		Y connector	1							
33			MB8365		T connector	1							
34			MB9158		Tube	1							
35			MB9808		EC label	1							
36			MB9893		Teflon tube	1							
37			MD1437		CE012S	1							
38	MD7492	P	MD7492		Block 1	1					REP	521-0087	0700
39			MD7493		Plate	1							
40	MU8244	C	MD7495		REF Block1	1						521-0087	0700
41			MD7496		Knob 1	1							
42			MD7497		Knob 2	1							
43			MD7498		Flange	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
44			MD7499		Boss	1							
45			MD7500		Spring B	1							
46			MD7501		Mounting nut	1							
47			MD7502		Shaft	1							
48			MD7505		Pillar C	1							
49			MD7506		Pillar A	1							
50	MU9627	C	MD7507		D pot	1							0400
51			MD7508		Pillar	1							
52			MD7509		Block	1							
53			MD7510		Nozzle receptacle	1							
54			MD7511		Nozzle fixer	1					to ME8160+ME8261	521-0022	0400
54			ME8160		Nozzle fixer	1						521-0022	0400
54			ME8261		Spacer	1						521-0022	0400
55	MU9628	C	MD7512		Collar	1							0400
56	MU9628	C	MD7514		Mix rod	1							0400
57			MD7515		Pin	2							
58			MD7517		Mounting screw	1							
59			MD7518		Plate	1							
60			MD7519		PCB base	1							
61			MD7520		PCB lid	1							
62			MD7521		Mounting plate	1							
63			MD7522		Bracket	1							
64			MD7523		Spacer	1							
65			MD7524		Mouthpiece	1							
66			MD7525		Waste water tube	1							
67			MD7526		Nozzle	2							
67			ME9655		Nozzle	2					No glue type	521-0069	0700
67	ME9718	P	ME9718		Nozzle	2					Stainless type	521-0093	0700
68			MD7527		Valve fixer	1							
69			MD7536		Cover receptacle 4	1							
70			MD7559		Connector	4							
71	MD7560	P	MD7560		T tube B	2					Teflon tube 1.5x2.5x600		
72			MD7651		Pillar C	3							
73			MD7681		Mouthpiece	1							
74			MD9887		Screw	2							
75	MD9888	P	MD9888		T tube B	1					Teflon tube 1x2x1100		
76			MD9890		Connector	4							
77			MD9891		L connector	1							
78			MD9892		Connector	1							
79			MD9893		Mark Band	1							
80			MD9894		Mark Band	1							
81			MD9895		Mark Band	2							
82	MD9897	P	MD9897		T fixer	6							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
83	MD9898	P	MD9898		T fixer	2							
84			MD9951		Pillar A	1							
85			MD9953		Earth plate	1							
86	MU9900	C	ME1201		O ring	1							0400
87			ME2652		Cover 1	1							
88			ME2653		Rear cover	1							
89			ME2654		Hinge	1							
90			ME2655		Hinge 2	1							
91			ME4942		Fixing rubber	1					to ME8182	521-0022	0400
91			ME8182		Fixing rubber	1						521-0022	0400
92			ME5001		T tube	1							
93	MU9899	C	ME5114		REF fixer	1							0400
94			ME6543		Mounting plate	1							
95			ME6544		Receptacle	1							
96			ME6545		Block plate	1							
97			ME6546		Mounting plate	1							
98			ME6547		Base	1							
99			ME6548		Shaft	1							
100			ME6549		Case	1							
101			ME6689		Cover 2	1							
102			MU1425		Thermistor	1	MD0509		Label	1			
103	MU8248	C	MU1425		Thermistor	1	MU1425#				A&T EMU11-500	521-0087	0700
104			MU3226		014 valve 1	1	DH128900		Connector pin	2			
105			MU3226		014 valve 1	1	DK121300		Housing	1			
106			MU3226		014 valve 1	1	DM156700		Solenoid valve	1			
107			MU3226		014 valve 1	1	DO089900		Heat shrink tube				
108	MU3226	P	MU3226		014 valve 1	1	MU3226#				REF valve		
109			MU3227		014 valve 2	1	DH128900		Connector pin	2			0700
110			MU3227		014 valve 2	1	DK121300		Housing	1			0700
111			MU3227		014 valve 2	1	DM103300		Solenoid valve	1			0700
112	MU3227	P	MU3227		014 valve 2	1	MU3227#				Mixture switching valve		0700
113			MU3228		014 motor 1	1	DH269300		Connector pin	4			
114			MU3228		014 motor 1	1	DK576100		Housing	1			
115			MU3228		014 motor 1	1	DM156600		Motor	1			
116			MU3228		014 motor 1	1	DO012400		Heat shrink tube				
117	MU3228	P	MU3228		014 motor 1	1	MU3228#				Mix motor		
118			MU3229		014SURFACE	1	DH079100		Terminal	2			
119			MU3229		014SURFACE	1	DH269300		Connector pin	2			
120			MU3229		014SURFACE	1	DK576100		Housing	1			
121			MU3229		014SURFACE	1	DO045600		Heat shrink tube				
122			MU3229		014SURFACE	1	DO089900		Heat shrink tube				
123			MU3229		014SURFACE	1	DW351000		UL1061 AWG26 W				
124			MU3229		014SURFACE	1	MD7513		Detection pin	2			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
125	MU3585	P	MU3229		014SURFACE	1	MU3229#						
126			MU5493#		M016-AA01								
127	MU3584	R	MV1041		014BIAN1A	1					Analog PCB		
128			MV1113		014 C0003	1							
129	MV1391	P	MV1391		014 C0006	1					Na electrode cable		
130	MV1392	P	MV1392		014 C0007	1					K electrode cable		
131	MV1393	P	MV1393		014 C0008	1					CL electrode cable		
132	MV1394	P	MV1394		014 C0009	1					REF electrode cable		
133			MV1559		014 C0010	1							
134			MV1560		014 C0011	1							
135			MU5976		CM parts for ISE nozzle break						ME8160+ME8182+ME8261+2xMD7526+2xME8229+SKB	521-0022	0400
135			MU6337		CM parts for ISE nozzle break						No glue type	521-0069	0700
135	MU6337	P	MU8247		CM parts for ISE nozzle break						Stainless type	521-0093	0700
136	MU5386	P	MU5386		Tube set						D pot - flowcell		0700
137	MU8247	P	MU8247		Tube set 2						MA3502+MD7559+MA3756	521-0087	0700

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M016-DA01(MU5463)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			GB6575		Fixing screw	3							
2			MA3091		Nut	3							
3			MA4822		Mark band	1							
4			MB0031		Seal	1							
5			MB5511		Grommet	1							
6			MB9893		Teflon tube	1							
7			MD0170		Mouthpiece	3							
8			MD5399		Bottle tube R	3							
9			MD7484		Tray	1							
10			MD7486		Tube S	1							
11			MD7487		Tube L	2							
12			MD7488		Valve plate	1							
13			MD7489		Mouthpiece plate	1							
14			MD8646		Mark Band	2							
15			MD8647		Mark Band	1							
16			MD9875		Cap	3							
17			MD9876		Mark Band	1							
18			MD9877		T tube B	1							
19			MD9878		Inside lid M	1							
20			MD9879		Inside lid B	1							
21			MD9880		Inside lid R	1							
22	MD9897	P	MD9897		T fixer	2							
23	MD9899	P	MD9899		T tube A	3					Teflon tube 1x2x350		
24			MU2945		Valve ass'y 4	1	DH128900		Connector pin	2			
25			MU2945		Valve ass'y 4	1	DK121300		Housing	1			
26			MU2945		Valve ass'y 4	1	DM069600		Solenoid valve	1			
27	MU2945	P	MU2945		Valve ass'y 4	1	MU2945#				CKD UMG1-T1-M		
28			MU3230		014 sensor	3	DH128900		Connector pin	3			
29			MU3230		014 sensor	3	DK150000		Housing	1			
30			MU3230		014 sensor	3	DT042700		Sensor	1			
31	MU3230	P	MU3230		014 sensor	3	MU3230#				Reagent detection sensor		
32			MU5463#		M016-DA01								

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M016-JA01(MU5515)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			MD9869		SW cover	1							
2			ME6426		PCB plate	1							
3			ME6427		PCB cover	1							
4			MU3211		014 power SW ass'y	1	DH063800		Connector pin	4			
4			MU3211		014 power SW ass'y	1	DH170900		Connector pin	4			
5			MU3211		014 power SW ass'y	1	DH114900		Connector pin	2			
6			MU3211		014 power SW ass'y	1	DH185000		Connector pin	4			
7			MU3211		014 power SW ass'y	1	DH238700		Connector pin	10			
8			MU3211		014 power SW ass'y	1	DK432800		Housing	1			
9			MU3211		014 power SW ass'y	1	DK497900		Housing	1			
10			MU3211		014 power SW ass'y	1	DO012300		Heat shrink tube				
11			MU3211		014 power SW ass'y	1	DO061400		Sleeve	8			
12			MU3211		014 power SW ass'y	1	DW008600						
13			MU3211		014 power SW ass'y	1	DW098900						
14			MU3211		014 power SW ass'y	1	DY199800		switch	1			
15	MU3211	P	MU3211		014 power SW ass'y	1	MU3211#						
16			MU5515#		M016-JA01								
17	MU5361	P	MV2190		015BICN1A	1							1100
18	MU5360	P	MV2191	1.2	015PPR01	1						521-0145	1100
18	MU5360	P	MV2191	1.2	015PPR01	1						526-0009	1200

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M240-OPH01(MU1853)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DH030800		Terminal	2							
2			DH115000		Terminal	2							
3			DH128900		Terminal	5							
4			DH181000		Terminal	6							
5			DK119100		Housing	1							
6			DK264400		Housing	1							
7			DK265600		Connector	1							
8			DK265700		Connector	1							
9			DK327400		Housing	1							
10			DK327500		Housing	1							
11			DM130800		Pump	1					MD-6ZA		
12			DO002700		Heat shrink tube								
13			DO045400		Heat shrink tube								
14			DW190500		AWG18HandW								
15			DW335900		AWG18								
16			DY168700		Float SW	1							
17			GB7510		Tube	2					12X18X300		
18			GB7881		Liflon tube	1					2X4X400		
19			GB9789		Tube	1					15X22X2000		
20			MA5834		L tube	1							
21			MA6345		Hose	4					12X18X60		
22			MA7527		Joint	1							
23			MB1973		Cord fixer	5							
24			MB7738		Y connector	1							
25			MB7778		Bush	2							
26			MB8851		Rubber pole	4							
27			MB9160		Hose	1					12X18X2000		
28			MD1259		C18.5	3							
29			MD1260		C16.7	6							
30			MD1925		Base	1							
31			MD1926		Cover	1							
32			MD1928		PCB cover	1							
33			MD1930		Tank holder	1							
34			MD1931		Tank	1							
35			MD1933		Hose 2	1					12X18X110		
36			MD3093		Name plate	1							
37			MD3110		Bottom pad	1							
38			MD3111		Upper pad	1							
39			MD3427		Box	1							
40			MD5292		User's guide	1					For Japan		
41			MD5293		User's guide	1							
42			MD9856		Stopper	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			ME5570		Mouthpiece	1							
44			ME5576		Lid	1							
45			ME5577		Mouthpiece	2							
46			ME5578		PCB receptacle	1							
47			MU1853#		M240-OPH01								
48	MU4135	P	MV0841		240BWPC1A	1	MV0841#				Forced drainage control board		
49			MZ0544		Bag	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M510-SA01(MU2465)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DH030800		Connector pin	1							
2			DH119700		Connector pin	7							
3			DH128900		Connector pin	5							
4			DK109800		Housing	1							
5			DK120800		Housing	1							
6			DM099900		Motor	1							
7			DO012000		Heat shrink tube								
8			DO012300		Heat shrink tube								
9			DO045400		Heat shrink tube								
10			DO045600		Heat shrink tube								
11			DS086100		Photo interrupter	1							
12			DW005700		UL1007 AWG24 B								
13			DW005900		UL1007 AWG24 W								
14			DW006200		UL1007 AWG24 D								
15			DW099000		UL1007 AWG18B/H								
16			DY097100		Micro SW	1							
17			GB8170		Insulation plate	1							
18			MA1719		P plate	1							
19			MA1720		Screw	1							
20			MA1722		Wire S	4							
21			MA1723		Wire L	4							
22			MA1725			2							
23			MA2561		Name plate	1							
24			MA3230		Center guide	1							
25			MA3231		Rack	1							
26			MA3236		Spring	1							
27			MA3238		Spring rack	1							
28			MA4920		Packing	1							
29			MB1204		Flag	1							
30			MB2839		Main body	1							
31			MB2840		C bracket	1							
32			MB2841		Guide	2							
33			MB2842		Switch plate	1							
34			MB2843		F block	1							
35			MB2844		Hanging spring plate	1							
36			MB2845		Spring rack	1							
37	MU2552	R	MU2465#		M510-SA01								

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-EC02(MU4663)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DC851200		Condenser								
2			DH128900		Connector pin	6							
3			DH181000		Connector pin	3							
4			DK120800		Housing	1							
5			DK264400		Housing	1							
6			DM162400		Gear head	1							
7			DM162500		Motor	1							
8			DO045400		Heat shrink tube								
9			DO153600		Condenser cap								
10			DS086100		Photo interrupter	2							
11			DW008200		WIRE AWG18 H								
12			DW221900		WIRE AWG26 DWB								
13			GB6135		Pipe	1							
14			GB8326		Bearing	1							
15			MA1720		Screw	5							
16			MA2561		Name plate	1							
17			MA9589		Bearing	1							
18			MB3010		Syringe base	1							
19			MB3018		Flag	1							
20			MB3023		Key	1							
21			MB3026		Bush	2							
22			MB9808		EC label	1							
23			MD9822		Thumbscrew	2							
24			MD9823		Syringe receiver	1							
25			MD9824		Cover	1							
26			MD9829		Housing	1							
27			ME0950		Cam	1							
28			ME0951		Sensor plate	2							
29			ME1017		PCB cover	1							
30			ME3599		Cam plate	1							
31			ME3600		Slider	1							
32			ME3602		Main body	1							
33			ME3603		Thumbscrew	0					Q'ty 2->0 For SE syringe	521-0060	0600
34			ME3604		LM guide	1							
35			ME3946		Flange receiver	1							
36			ME3947		Flange receiver	1							
37			ME3948		Motor table	1							
38			ME4947		Cover	1							
39			MU4663#	C	M520-EC02								
39			MU4663#	D	M520-EC02						DR PCB SSR change	521-0051	
39			MU4663#	E	M520-EC02						New syringe	521-0060	
39			MU4663#	F	M520-EC02						SSR change	521-0082	

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
39			MU4663#	G	M520-EC02						LM guide grease	521-0090	
39			MU4663#	H	M520-EC02						Add R=220Kohm	521-0108	
39	MU4664	R	MU4663#	J	M520-EC02						LM guide grease AFB -> AFC	521-0162	1200
39	MU4664	R	MU4663#	J	M520-EC02						LM guide grease AFB -> AFC	526-0034	1200
40			MV1885	A	520BADR2A	1							
40			MV1885	B	520BADR2A	1							
40			MV1885	C	520BADR2A	1							
40	MU4627	P	MV1885	D	520BADR2A	1						521-0108	1100
41	MU8239	C	MU8239		E syringe	2					(ME8923+ME8924) switched in 2000/2	521-0061	0600

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-FB01(MU3164)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	2					Japan ArefuOL-EE-SH3		
2			MA2561		Name plate	1							
3	ZM1131	C	MA3627		Joint	20					Silicon tube 1x3x20		0400
4			MA6072		Collar	1							
5			MA7013		Spring	1							
6			MA8367		H sensor receptacle	2							
7			MA9589		Bearing	1							
8	MB1965	P	MB1965		Teflon tube	7							
9			MB1973		Cord fixer	6							
10			MB7597		Pin	2							
11			MB7598		Fixing screw	1							
12	MB7756	P	MB7756		Joint	20							
13			MB9808		EC label	1							
14	MD4102	P	MD4102		Nozzle guide	8							
15			MD4104		D spring	8							
16			MD7050		Base	1							
17			MD7051		Stay	1							
18			MD7052		Slider	1							
19			MD7053		L plate	1							
20			MD7054		Pillar C	1							
21			MD7055		Pillar C	1							
22			MD7056		Rotation shaft	1							
23			MD7057		Receptacle	2							
24			MD7058		Ceiling plate	1							
25			MD7059		Mounting plate	1							
26	MD7060	P	MD7060		N holder	2							
27	MU9600	C	MD7061		WS nozzle	6							0400
28	MU9601	C	MD7062		S nozzle	1							0400
29			MD7065		LM guide	1							
30			MD9881		Tube	8							
31			MD9882		Tube	1							
32			ME1515		Tube	4							
33			MU2954		520PM ass'y 11	1	DH128900		Connector pin	6			
34			MU2954		520PM ass'y 11	1	DK119100		Housing	1			
35			MU2954		520PM ass'y 11	1	DM162600		Pulse motor	1	MU2954B	521-0100	0700
36	MU2954	P	MU2954		520PM ass'y 11	1	MU2954#				Japan servoPF55-48K1G1/20(B.B)		
36	MU2954	P	MU2954	B	520PM ass'y 11	1	MU2954#				Japan servoPF55-48K1G4/20(B.B)	521-0100	0700
37	MU3632	R	MU3164#	C	M520-FB01								
37	MU3632	R	MU3164#	D	M520-FB01							521-0100	0700
38	MU9602	C	MU3536		Dry nozzle	1	MD7063		D nozzle	1			0400
39	MU9602	C	MU3536		Dry nozzle	1	MD7064		D chip	1			0400
40	MU9602	C	MU3536		Dry nozzle	1	MU3536#						0400
41			MV1078		520C0036	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-FC01(MU3165)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	3					Japan ArefuOL-EE-SH3		
2			GB5843		Bearing	2							
3			GB5844		Bearing	18							
4			MA2561		Name plate	1							
5			MA3417		Bearing	1							
6			MB1464		Bearing	2							
7			MB1973		Cord fixer	1							
8			MB5819		Screw	4							
9			MB7583		Rivet	2							
10			MB9808		EC label	1							
11			MD7073		Frame	1							
12			MD7074		M base	2							
13			MD7075		Cover	1							
14	MD7076	P	MD7076		Mix gear	6							
15			MD7077		Gear 70	3							
16			MD7078		Gear 80	1							
17			MD7079		Gear 30	1							
18			MD7080		Motor gear	1							
19			MD7081		Cover plate	1							
20			MD7082		Pillar 1	3							
21			MD7083		Flange	1							
22			MD7084		Collar	1							
23			MD7085		Shaft	1							
24			MD7086		Disk	1							
25			MD7087		Sensor plate	2							
26			MD7088		Disc table	1							
27			MD7089		Housing	1							
28			MD7090		Top plate	1							
29			MD7091		R motor plate	1							
30			MD7092		Spring plate	1							
31			MD7093		Pillar 2	4							
32			MD7094		Drive plate	1							
33			MD7095		Fixing plate	1							
34			MD7096		B fixer	1							
35			MD7097		Pillar 3	3							
36			MD7098		M motor plate	1							
37			MD7099		Sensor plate	1							
38			MD7100		Sensor plate	1							
39			MD7101		Spacer	1							
40			MD7102		B guide	1							
41			MD7103		Pulley shaft	1							
42			MD7104		L plate	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			MD7105		SP shaft	1							
44			MD7106		Pulley 48	1							
45			MD7107		Pulley 16A	1							
46			MD7108		Pulley 16B	1							
47			MD7109		Pulley 16C	1							
48			MD7110		Belt 1	1							
49			MD7111		Belt 2	1							
50			MD7113		Spring	1							
51			MD7114		Bearing	2							
52			MD7134		Bearing S	2							
53			MD9825		Spacer	1							
54			MU2922		520 PM ass'y 5	1	DH128900		Connector pin	6			
55			MU2922		520 PM ass'y 5	1	DK119100		Housing	1			
56			MU2922		520 PM ass'y 5	1	DM155000		pulse motor	1			
57	MU2922	P	MU2922		520 PM ass'y 5	1	MU2922#						
58			MU2924		520 PM ass'y 7	1	DH128900		Connector pin	6			
59			MU2924		520 PM ass'y 7	1	DK119100		Housing	1			
60			MU2924		520 PM ass'y 7	1	DM140900		pulse motor	1			
61	MU2924	P	MU2924		520 PM ass'y 7	1	MU2924#						
62			MU2968		520 PM ass'y 10	1	DH114900		Connector pin	6			
63			MU2968		520 PM ass'y 10	1	DH128900		Connector pin	6			
64			MU2968		520 PM ass'y 10	1	DK119100		Housing	1			
65			MU2968		520 PM ass'y 10	1	DM140900		pulse motor	1			
66			MU2968		520 PM ass'y 10	1	DO121100						
67			MU2968		520 PM ass'y 10	1	DW120700		AG51C010AWG27W				
68	MU2968	P	MU2968		520 PM ass'y 10	1	MU2968#						
69			MU3165#	C	M520-FC01								
69	MU3633	R	MU3165#	D	M520-FC01							521-0156	1100
69	MU3633	R	MU3165#	D	M520-FC01							526-0021	1200
70			MV1078		520 C0036	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	3					Japan ArefuOL-EE-SH3		
2			GB5843		Bearing	2							
3			GB5844		Bearing	12							
4			MA2561		Name plate	1							
5			MA3417		Bearing	1							
6			MB1464		Bearing	2							
7			MB1973		Cord fixer	1							
8			MB5819		Screw	4							
9			MB7583		Rivet	2							
10			MB9808		EC label	1							
11			MD7073		Frame	1							
12			MD7074		M base	2							
13	MD7076	P	MD7076		Mix gear	3							
14			MD7077		Gear 70	3							
15			MD7078		Gear 80	1							
16			MD7079		Gear 30	1							
17			MD7080		Motor gear	1							
18			MD7081		Cover plate	1							
19			MD7082		Pillar 1	3							
20			MD7083		Flange	1							
21			MD7084		Collar	1							
22			MD7085		Shaft	1							
23			MD7086		Disk	1							
24			MD7087		Sensor plate	2							
25			MD7088		Disc table	1							
26			MD7089		Housing	1							
27			MD7090		Top plate	1							
28			MD7091		R motor plate	1							
29			MD7092		Spring plate	1							
30			MD7093		Pillar 2	4							
31			MD7094		Drive plate	1							
32			MD7095		Fixing plate	1							
33			MD7096		B fixer	1							
34			MD7097		Pillar 3	3							
35			MD7098		M motor plate	1							
36			MD7099		Sensor plate	1							
37			MD7100		Sensor plate	1							
38			MD7101		Spacer	1							
39			MD7102		B guide	1							
40			MD7103		Pulley shaft	1							
41			MD7104		L plate	1							
42			MD7105		SP shaft	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			MD7106		Pulley 48	1							
44			MD7107		Pulley 16A	1							
45			MD7108		Pulley 16B	1							
46			MD7109		Pulley 16C	1							
47			MD7110		Belt 1	1							
48			MD7111		Belt 2	1							
49			MD7113		Spring	1							
50			MD7114		Bearing	2							
51			MD7134		Bearing S	2							
52			MD9825		Spacer	1							
53			MD9827		Cover	1							
54			MU2922		520 PM ass'y 5	1	DH128900		Connector pin	6			
55			MU2922		520 PM ass'y 5	1	DK119100		Housing	1			
56			MU2922		520 PM ass'y 5	1	DM155000		pulse motor	1			
57	MU2922	P	MU2922		520 PM ass'y 5	1	MU2922#						
58			MU2924		520 PM ass'y 7	1	DH128900		Connector pin	6			
59			MU2924		520 PM ass'y 7	1	DK119100		Housing	1			
60			MU2924		520 PM ass'y 7	1	DM140900		pulse motor	1			
61	MU2924	P	MU2924		520 PM ass'y 7	1	MU2924#						
62			MU2968		520 PM ass'y 10	1	DH114900		Connector pin	6			
63			MU2968		520 PM ass'y 10	1	DH128900		Connector pin	6			
64			MU2968		520 PM ass'y 10	1	DK119100			1			
65			MU2968		520 PM ass'y 10	1	DM140900		pulse motor	1			
66			MU2968		520 PM ass'y 10	1	DO121100						
67			MU2968		520 PM ass'y 10	1	DW120700		AG51C010AWG27W				
68	MU2968	P	MU2968		520 PM ass'y 10	1	MU2968#						
69			MU3367#	B	M520-FC11								
69	MU3634	R	MU3367#	C	M520-FC11							521-0156	1100
69	MU3634	R	MU3367#	C	M520-FC11							526-0021	1200
70			MV1078		520 C0036	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC01(MU3171)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB088000		Breaker	1					250V,40A NRBM2100F-40AAA		
2			DF091500		Filter	1					250V,40A LF-240U		
3			DH147700		Terminal	16							
4			DH163600		Terminal	4							
5			DH176100		Terminal table	1							
6			DO118500		Cap	4							
7			DO120500		Cap	20							
8			DW318000		Wire								
9			DW318100		Wire								
10			DW400500		Wire AWG8 GYYY								
11			GB9787		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MD3905		L1 name plate	1							
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3171#		M520-JC01	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC11(MU3172)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB087900		Breaker	1					250V,20A IELH-1-11-62F-20A-M		
2			DF020900		Filter	1					250V,20A ZAC2220-11		
3			DH127300		Terminal	10							
4			DH129400		Terminal	4							
5			DH147700		Terminal	4							
6			DH176100		Terminal table	1					600V,60A, 3pin UF-1005-60A-3P		
7			DW138000		Wire AWG12 H								
8			DW138100		Wire AWG12 W								
9			DW400500		Wire AWG8 GYYY								
10			MA4967		Cap	4							
11			MB3521		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MD3905		L1 name plate	1							
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3172#		M520-JC11	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC21(MU3173)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB087900		Breaker	1					250V,20A IELH-1-11-62F-20A-M		
2			DF020900		Filter	1					250V,20A ZAC2220-11		
3			DH127300		Terminal	10							
4			DH129400		Terminal	4							
5			DH147700		Terminal	4							
6			DH176100		Terminal table	1					600V,60A,3pin UF-1005-60A-3P		
7			DW138000		Wire AWG12 H								
8			DW138100		Wire AWG12 W								
9			DW400500		Wire AWG8 GYYY								
10			MA4967		Cap	4							
11			MB3521		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MB6527		L1 label	1					Newly registered.	520-0169	
14			MD6527		L1 label	1					(to be deleted.)	520-0169	
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3173#		M520-JC21	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC31(MU3174)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB087900		Breaker	1					250V,20A IELH-1-11-62F-20A-M		
2			DF020900		Filter	1					250V,20A ZAC2220-11		
3			DH127300		Terminal	10							
4			DH129400		Terminal	4							
5			DH147700		Terminal	4							
6			DH176100		Terminal table	1					600V,60A,3pin UF-1005-60A-3P		
7			DW138000		Wire AWG12 H								
8			DW138100		Wire AWG12 W								
9			DW400500		Wire AWG8 GYYY								
10			MA4967		Cap	4							
11			MB3521		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MB6527		L1 label	1					Newly registered.	520-0169	
14			MD6527		L1 label	1					(to be deleted.)	520-0169	
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3174#		M520-JC31	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC41(MU3175)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB088000		Breaker	1					250V,40A IULH-1-11-62F-40A-M		
2			DF091500		Filter	1					250V,40A LF-240U		
3			DH147700		Terminal	16							
4			DH163600		Terminal	4							
5			DH176100		Terminal table	1					600V,60A,3pin UF-1005-60A-3P		
6			DO118500		Cap	4							
7			DO120500		Cap	20							
8			DW412300		Wire AWG8 W								
9			DW395000		Wire AWG8 B								
10			DW400500		Wire AWG8 GYYY								
11			GB9787		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MD3905		L1 name plate	1							
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3175#		M520-JC41	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC51(MU3176)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB087900		Breaker	1					250V,20A IELH-1-11-62F-20A-M		
2			DF020900		Filter	1					250V,20A ZAC2220-11		
3			DH127300		Terminal	10							
4			DH129400		Terminal	4							
5			DH147700		Terminal	4							
6			DH176100		Terminal table	1					600V,60A,3pin UF-1005-60A-3P		
7			DW138000		Wire AWG12 H								
8			DW138100		Wire AWG12 W								
9			DW400500		Wire AWG8 GYYY								
10			MA4967		Cap	4							
11			MB3521		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MD3905		L1 name plate	1							
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3176#		M520-JC51	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JC61(MU3665)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB087900		Breaker	1					250V,20A IELH-1-11-62F-20A-M		
2			DF020900		Filter	1					250V,20A ZAC2220-11		
3			DH127300		Terminal	10							
4			DH129400		Terminal	4							
5			DH147700		Terminal	4							
6			DH176100		Terminal table	1					600V,60A,3pin UF-1005-60A-3P		
7			DW138000		Wire AWG12 H								
8			DW138100		Wire AWG12 W								
9			DW400500		Wire AWG8 GYYY								
10			MA4967		Cap	4							
11			MB3521		Saddle	1							
12			MB9131		Model label	1							
13			MB9132		EC label	1							
14			MD3905		L1 name plate	1							
15			MD7720		Back cover	1							
16			MD7721		SW cover	1							
17			MD9957		Name plate	1							
18			ME1644		Name plate	1					Newly registered.	520-0073	
19			MU3665#		M520-JC61	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JE01(MU3180)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			MU3180#		M520-JE01	1							
2			MV0314		250C0073	1	MV0314#						

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JE11(MU3181)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			MU3181#		M520-JE11	1							
2			MV0550		240C0047	1	MV0550#						

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-JE21(MU3182)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			MU3182#		M520-JE21	1							
2			MV0551		240C0048	1	MV0551#						

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-OPH01(MU4148)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DH030800		Terminal	2							
2			DH115000		Terminal	2							
3			DH128900		Terminal	5							
4			DH181000		Terminal	6							
5			DK119100		Housing	1							
6			DK264400		Housing	1							
7			DK265600		Connector	1							
8			DK265700		Connector	1							
9			DK327400		Housing	1							
10			DK327500		Housing	1							
11			DM130800		Pump	1					Iwaki MD-6ZA AC100V,24VA,5.5L/min		
12			DO002700		Heat shrink tube								
13			DO045400		Heat shrink tube								
14			DW190500		AWG18HandW								
15			DW419900		Shield wire						AWG18X3		
16			DY168700		Float SW	1							
17			GB7148		Tube	1					2X4X200	520-0231	
17			GB7881		Tube	1					2X4X400		
18			GB7510		Liflon tube	2					12X18X300 Qty 1 -> 2	520-0231	
19			GB9789		Tube	1					15X22X2000		
20			MA5834		L type pipe	1							
21			MA6345		Brade hose	4					12X18X60		
22			MA7527		Joint	1					Qty 2 -> 1	520-0231	
23			MB1973		Cord fixer	5							
24			MB7738		Y connector	1							
25			MB7778		Bush	2							
26			MB8851		Rubber bush	4							
27			MB9132		EC label	1							
28			MB9160		Brade hose	1					12x18x2000	520-0231	
29			MB9807		Model label	1							
30			MD1259		C18.5	3							
31			MD1260		C16.7	6							
32			MD1925		Base	1							
33			MD1926		Cover	1							
34			MD1928		PCB cover	1							
35			MD1930		Tank holder	1							
36			MD1931		Tank	1							
37			MD1933		Brade hose	1							
38			MD3110		Bottom pad	1							
39			MD3111		Upper pad	1							
40			MD3427		Box	1							
41			MD5293		User's guide	1					For overseas		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
42			MD9856		Stopper	1						520-0231	
43			ME0404		Name plate	1							
44			MD1929		Joint	2							
44			ME5570		Joint	1						520-0231	
45			MD1934		Lid	1							
45			ME5576		Lid	1						520-0231	
46			ME5577		Joint	2						520-0231	
47			MD1927		PCB receptacle	1							
47			ME5578		PCB receptacle	1						520-0231	
48			MU4148#		M520-OPH01	1							
49	MU5055	P	MV1948		520BWPC2A	1	MV1948#					520-0146	
50			MZ0544		Bag	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M520-OPH02(MU4702)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DH030800		Terminal	2							
2			DH115000		Terminal	2							
3			DH128900		Terminal	5							
4			DH181000		Terminal	6							
5			DK119100		Housing	1							
6			DK264400		Housing	1							
7			DK265600		Connector	1							
8			DK265700		Connector	1							
9			DK327400		Housing	1							
10			DK327500		Housing	1							
11			DM130800		Pump	1					Iwaki MD-6ZA AC100V,24VA,5.5L/min		
12			DO002700		Heat shrink tube								
13			DO045400		Heat shrink tube								
14			DW190500		AWG18HandW								
15			DW419900		Shield wire						AWG18X3		
16			DY168700		Float SW	1							
17			GB7148		Tube	1					2X4X200	520-0231	
17			GB7881		Tube	1					2X4X400		
18			GB7510		Liflon tube	2					12X18X300 Qty 1 -> 2	520-0231	
19			GB9789		Tube	1					15X22X2000		
20			MA5834		L type pipe	1							
21			MA6345		Brade hose	4					12X18X60		
22			MA7527		Joint	1					Qty 2 -> 1	520-0231	
23			MB1973		Cord fixer	5							
24			MB7738		Y connector	1							
25			MB7778		Bush	2							
26			MB8851		Rubber bush	4							
27			MB9132		EC label	1							
28			MB9160		Brade hose	1					12x18x2000	520-0231	
29			MB9807		Model label	1							
30			MD1259		C18.5	3							
31			MD1260		C16.7	6							
32			MD1925		Base	1							
33			MD1926		Cover	1							
34			MD1928		PCB cover	1							
35			MD1930		Tank holder	1							
36			MD1931		Tank	1							
37			MD1933		Brade hose	1							
38			MD3110		Bottom pad	1							
39			MD3111		Upper pad	1							
40			MD3427		Box	1							
41			MD5293		User's guide	1					For overseas		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
42			MD9856		Stopper	1						520-0231	
43			ME0404		Name plate	1							
44			MD1929		Joint	2							
44			ME5570		Joint	1					0.9 (2.5)	520-0231	
45			MD1934		Lid	1							
45			ME5576		Lid	1						520-0231	
46			ME5577		Joint	2						520-0231	
47			MD1927		PCB receptacle	1							
47			ME5578		PCB receptacle	1						520-0231	
48			MU4702#		M520-OPH02	1							
49			MV1957		520BWPC3A	1	MV1957#					520-0146	
50			MZ0544		Bag	1						520-0231	

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DH125000		Connector pin	2							
2			DH174000		Connector pin	2							
3			DK117800		Housing	1							
4			DK121300		Housing	1							
5			DL155900		Transformer	1							
6	DM076700	P	DM076700		AC fan	5					Minebea4710PS-10TB30-B00		
7	DM085900	P	DM085900		AC fan	2							
7	DM233500	P	DM233500		AC fan	2						521-0175	1300
8	DM155400	P	DM155400		DC pump	4					Sanso Electronic PMD-24D-311OP1		
9	DP067900	P	DP067900		Converter	1					(PS1) Nemic lambda LWT30H-5FF		1200
10	DP070900	P	DP070900		Converter	1					(PS2) Nemic lambda LWT15H-5FF		1200
11	DP076200	R	DP076200		Converter	1					(PS5) Koki Electric OLY-40UC		1200
12	DP077600	P	DP077600		Converter	2					(PS3, 4) Nemic lambda EWS600P-24		1200
13	DX039600	P	DX039600		SSR	1					Japan inter D2W115CD For Cuv wash		
14			DY201300		Magnet	1							
15			DY203700		Push button SW	1							
16			DY206900		Push button SW	1							
17			DY207000		Key top	1							
18			DY207100		Key top	1							
19	DZ235400	P	DZ235400		Barcode reader	1					Olympus symbol LSK6220-I1B0JG For rack ID		1100
20			GB5314		T fixer	1							
21	GB5598	P	GB5598		Y connector 1	11					For 7mm tube		
22	GB5599	P	GB5599		Y connector 2	13					For 2.5mm tube		
23			GB6273		Lifelon tube	1							
24			GB6575		Fixing screw	3							
25			GB6869		Lifelon tube	5							
26			GB6871		Lifelon tube	2							
27			GB6873		Lifelon tube	4							
28			GB6875		Lifelon tube	5							
29			GB6881		Lifelon tube	1							
30			GB6883		Lifelon tube	2							
31			GB7153		Lifelon tube	2							
32			GB7155		Lifelon tube	4							
33			GB7160		Lifelon tube	2							
34			GB7161		Lifelon tube	2							
35			GB7162		Lifelon tube	1							
36			GB7163		Lifelon tube	2							
37			GB7324		Lifelon tube	4							
38			GB7325		Lifelon tube	6							
39			GB7507		Lifelon tube	5							
40			GB7508		Lifelon tube	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			GB7510		Lifelon tube	3							
42			GB7776		T fixer	2							
43			GB9540		Lifelon tube	5							
44			GB9541		Lifelon tube	2							
45			GS4564		C16.7	24							
46			MA1110		Name plate	3							
47	MA2212	P	MA2212		Teflon tube	2					Both side conical shape T1.5x2.5X150		
48	MA2213	P	MA2213		Teflon tube	2					Both side conical shape T1.5x2.5x270		
49	MA2214	P	MA2214		Teflon tube	1					Both side conical shape T1.5x2.5x490		
50	MA2217	P	MA2217		Teflon tube	1					Both side conical shape T1x2x100		
51			MA2386		Fixer	10							
52			MA2561		Name plate	1							
53	MA2632	P	MA2632		Teflon tube	1					One side conical shape T1x2x300		
54	MA2997	P	MA2997		Y connector	1					For 5mm tube		
55			MA3134		Tube	2							
56			MA3135		Tube	3							
57			MA3137		Tube	2							
58			MA3143		Tube	1							
59			MA3225		Lifelon tube	1							
60			MA3226		Lifelon tube	2							
61			MA3227		Lifelon tube	3							
62			MA3307		Collar	2							
63	MA3511	P	MA3511		Teflon tube	1					Both side conical shape T1x2x550		
64			MA3649		Lifelon tube	1							
65			MA3730		Mark Band	2							
66			MA3731		Mark Band	2							
67			MA3751		Mark Band	2							
68			MA3752		Mark Band	1							
69			MA3753		Mark Band	1							
70			MA3754		Mark Band	1							
71			MA4757		Tube	1							
72			MA4759		Tube	1							
73			MA4819		Mark Band	1							
74			MA4907		Tube	1							
75			MA4912		Mark Band	4							
76			MA4913		Mark Band	4							
77	MA4966	P	MA4996		Lifelon tube	6					Lifelon 7x13x10m SD0133		
78			MA5107		Lifelon tube	3							
79			MA5186		Mark Band	2							
80			MA5187		Mark Band	4							
81			MA5621		Joint	2							
82	MA5834	P	MA5834		L tube	25					For 12mm tube (Q'ty 24 -> 25)	521-0048	0600

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
83			MA6308		Cushion	4							
84			MA6939		Mouthpiece	6							
85			MA7092		Nut	6							
86			MA7137		Mouthpiece V	1							
87			MA7519		Joint	7							
88			MA7590		Joint	5							
89			MA7609		Condenser	1							
90			MA7644		Joint	5							
91			MA7663		Lifelon tube	2							
92			MA7664		Lifelon tube	1							
93			MA7665		Lifelon tube	1							
94			MA7666		Lifelon tube	2							
95			MA7667		Lifelon tube	23					12x18x60 Q'ty 21->23	521-0048	0600
96			MA7670		Lifelon tube	1							
97			MA7679		Tube	1							
98			MA7681		Tube	1							
99			MA7683		Tube	1							
100			MA7723		Lifelon tube	1							
101			MA7724		Lifelon tube	2							
102			MA7726		Lifelon tube	4							
103			MA7727		Tube	2							
104			MA7728		Tube	1							
105			MA8183		Pin	1							
106	MB0018	P	MB0018		L tube	2					For 7mm tube		
107	MB0020	P	MB0020		T tube	23					For 12mm tube		
108			MB0150		Tube	1							
109			MB0151		Tube	3							
110			MB0157		Tube	1							
111			MB0158		Tube	1							
112			MB0764		Tube	1							
113			MB0766		Tube	1							
114			MB1602		Tube	1							
115			MB1747		Tube	4							
116			MB1973		Cord fixer	60							
117			MB2500		Lifelon tube	3							
118			MB2751		Receptacle	6							
119			MB3907		Screw	6							
120			MB3913		Top plate	1							
121			MB5662		Teflon tube	1							
121			ME7878		Tube fixer	1					Eleminated by 521-0034	521-0009	0400
121			ME7130		Teflon tube	1					Connect to S valve with MD2796	521-0034	0400
122			MB5753		Tube	24							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
123			MB7597		Pin	27							
124			MB7737		O ring	1							
125	MB7738	P	MB7738		Y connector	6					For 12mm tube		
126			MB8014		Knob	1							
127			MB8063		Hinge nut	4							
128			MB8176		MG catch	2							
129			MB8612		Name plate	1							
130			MB8889		Tube	1							
131			MB8896		Tube	6							
132			MB9158		Tube	3							
133	MB9796	P	MB9796		Diaphragm	1					1.1(5)		
134			MB9808		EC label	1							
135			MD0004		Lifelon tube	1							
136			MD0005		Lifelon tube	9							
137			MD0009		Lifelon tube	1							
138	ZM3079	C	MD0077		Filter	2					300 micron for DI water		0400
139			MD0591		Teflon tube	1							
140			MD0663		Rubber tube	4							
141			MD1191		Lifelon tube	6							
142			MD1192		Lifelon tube	2							
143			MD1259		C16.7	16							
144			MD1260		C16.7	34							
145			MD1409		Lifelon tube	5							
146			MD1436		Tube	1							
147			MD1438		CE012	1							
148			MD1440		CE012	1							
149			MD1441		CE012	1							
150			MD1445		CE012	1							
151			MD1759		Name plate	3							
152			MD1883		Lifelon tube	2							
153			MD2770		Tube	1							
154			MD2773		Tube	4							
155			MD2780		Tube	1							
156	MD2796	P	MD2796		Teflon tube	1					One side conical shape T2x3x200		
157			MD2854		Teflon tube	2							
158			MD3915		C16.7	8							
159			MD7408		Prop	1							
160			MD7419		Positioning pin	1							
161			MD7476		Tube	2							
162			MD7477		Connector	4							
163			MD7562		PCB receptacle 1	1							
164			MD7563		PCB receptacle 2	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
165			MD7569		Cover L	1							
166			MD7572		Front door L	1							
167			MD7574		C cover F	1							
168			MD7575		C cover R	1							
169			MD7586		Cover base	1							
170			MD7588		Pin	4							
171			MD7589		L metal fittings	4							
172			MD7591		F post 1	1							
173			MD7593		F pillar 2	1							
174	MU9593	C	MD7596		Filter	3					140x140 for small fan		0400
175	MU9594	C	MD7597		Filter	1					160x305 for large fan		0400
176			MD7598		Hinge R	2							
177			MD7599		Hinge L	2							
178			MD7602		Catch	2							
179			MD7603		Catch plate	1							
180			MD7604		Hinge	2							
181			MD7606		Cover 1	1							
182			MD7609		Cover 4	1							
183			MD7610		Cover 5	1							
184			MD7611		Cover 6	1							
185			MD7612		Cover 7	1							
186			MD7613		Cover 8	1							
187			MD7614		Lamp cover	1							
188			MD7616		Cap	24							
189			MD7617		Pillar C	16							
190			MD7618		M cup 1	2							
190			MF0241		M cup 1	2							
191			MD7619		M cup 2	2							
192			MD7620		MC base	4							
193			MD7638		Pillar C	8							
194			MD7639		PCB receptacle	1							
195			MD7640		Cover	1							
196			MD7641		Lamp receiver	1							
197			MD7642		Pillar C	5							
198			MD7644		Valve plate	2							
199			MD7645		Fan plate 1	1							
200			MD7646		Fan plate 2	3							
201			MD7647		Joint	1							
202			MD7648		Joint 2	1							
203			MD7649		C cup	1							
204			MD7704		Fixing plate	1							
205			MD7712		Mounting plate	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
206			MD7716		SA plate	1							
207			MD7717		SA plate	1							
208			MD7719		Covering	1							
209			MD7727		C plate 2	1							
210			MD7728		R shelf 2	1							
211			MD7729		Partition plate 3	1							
212			MD7732		Valve plate	1							
213			MD7734		Fixing plate	1							
214			MD7735		Pipe table 3	1							
215			MD7737		Receptacle	1					to ME7957	521-0041	0400
215			ME7957		Receptacle	1						521-0041	0400
215			MF0199		Receptacle	1						521-0129	0800
216			MD7738		Lid	1							
217	MU9638	C	MD7740		O ring	6					Cuv wash water dispense		0400
218			MD7741		Fixer	1						521-0041	0400
218			ME7956		Fixer	1					to ME7956	521-0041	0400
218			MF0198		Fixer	1						521-0129	0800
219			MD7743		Pin	2						521-0041	0400
220			MD7744		Pipe table 1	2							
220			MF0238		Pipe table 1	2							
221			MD7745		Pipe table 2	1							
222			MD7746		Terminal 1	1							
223			MD7747		Nozzle receptacle 1	1							
224			MD7748		Cap	6							
225	MD7749	P	MD7749		Packing	6					Cuv wash terminal packing		
226			MD7750		Terminal	1							
227			MD7751		Nozzle receptacle 2	1							
228			MD7752		Terminal 3	1							
229			MD7753		Nozzle receptacle 3	1							
230			MD7754		Terminal 4	1							
231			MD7755		Nozzle receptacle 4	1							
232			MD7757		Flat plate	1							
233			MD7759		Hinge table	1							
234			MD7760		Waste water bottle	1							
235			MD7761		Waste water lid	1							
236			MD7766		Valve plate 1	1							
237			MD7768		Manifold	1							
238			MD7769		Rubber vibration insulator	10							
239			MD7770		Rubber vibration insulator	2							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
240			MD7772		Rubber vibration insulator	11							
241			MD7773		Mouthpiece	1							
242			MD7774		Nut	4							
243			MD7775		Receptacle	1							
244			MD7776		Cap	1							
245	MU9596	C	MD7777		Plastic tank	1					DI water tank		0400
246			MD7778		C body	4							
247	MD7779	P	MD7779		C insert	4					Inner part for DI water tank mouthpiece		
248			MD7781		Ring	1							
249	MU9637	C	MD7784		O ring	1					For DI water tank filter		0400
250	MU9598	C	MD7785		Plastic tank	2					Detergent tank		0400
251	MD7786	P	MD7786		Cock	2							
252			MD7787		Mouthpiece	4							
253			MD7788		Bracket	3							
253			MF0221		Bracket	3							
254			MD7789		Mouthpiece	2							
255			MD7796		Clamp	3							
256			MD7797		Spacer	6							
257			MD7799		Fan plate 1	1							
258			MD7803		P receptacle	1							
259			MD7804		Base 1	1							
260			MD7805		Base 2	1							
261			MD7806		Fan plate 2	1							
262			MD7807		Weight 1	1							
263			MD7808		Weight 2	2							
264			MD7809		Thermo receptacle	1							
265	MU9597	C	MD7821		Plastic tank	2					for pure detergent tank		0400
265			MF0205		ODI Cap	2						521-0121	0800
266			MD7823		Mouthpiece	1							
267			MD7832		Mouthpiece	3							
268	MD7835	P	MD7835		Teflon tube	3					Both side conical shape T1.5x2.5x300		
269	MD7931	P	MD7931		Synapse	6					For T2		
270			MD7960		Mouthpiece	6							
271	MD9203	P	MD9203		Teflon tube	2					Both side conical shape T2x3x120		
272	MD9208	P	MD9208		Diaphragm 1	4					0.6 (2.5)		
273	MD9209	P	MD9209		Diaphragm 2	3					1.0 (2.5)		
274	MD9211	P	MD9211		Diaphragm 4	4					2.5 (5)		
275			MD9212		Mouthpiece	1							
276			MD9559		L plate	1							
277			MD9810		Saddle	6							
278			MD9812		Grommet	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
279			MD9821		Mouthpiece	2							
280			MD9839		Terminal 5	1							
281			MD9840		Terminal 6	1							
282			MD9841		Nozzle receptacle 5	2							
283			MD9856		Stopper	1							
284			MD9860		Blanket R	1							
285			MD9861		Pipe table R	1							
286			MD9862		C cup base	1							
287			MD9867		SW plate	1							
288			MD9890		Connector	4							
289	MD9896	P	MD9896		Gas spring	2							
290			MD9954		C cup lid	1							
291			MD9976		Name plate	1							
292			MD9986		Teflon tube	4							
293			MD9987		Lifelon tube	10							
294			MD9988		Teflon tube	1							
295			MD9989		Teflon tube	6							
296			MD9991		Teflon tube	2							
297			MD9993		Teflon tube	2							
298			MD9994		Teflon tube	2							
299			MD9997		Lifelon tube	2							
300			MD9998		Lifelon tube	3							
301			MD9999		Lifelon tube	1							
302			ME0001		Lifelon tube	6							
303			ME0003		Lifelon tube	1							
304			ME0046		N receptacle	2							
305			ME0052		Reinforcement plate	2							
306			ME0175		Bush	3							
307			ME0215		PCB plate	1							
308			ME0304		Valve plate	1							
309			ME0320		Teflon tube	3							
310			ME0366		Tank lid	1							
311			ME0957		PCB cover	1							
312			ME1357		Receptacle	1							
313			ME1358		Fixer	1							
314			ME1359		Cap	1							
315			ME1360		Mounting plate	1							
316			ME1366		Name plate	1							
317			ME1514		T tube C	2							
318			ME1516		Lifelon tube	1							
319			ME1565		Valve plate	1							
320	ME1580	P	ME1580		Diaphragm 5	1					2.0 (12)		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
321			ME1639		Name plate	1							
322			ME2577		Hinge	3							
323			ME2900		Lid	1							
324			ME3611		F post 5	1							
325			ME4305		Coolant	2							
326			ME4984		Rubber	2							
327			ME4997		L plate	1							
328			ME5004		Joint 1	6					to ME7957	521-0041	0400
329			ME5005		Joint 2	6					to ME7956	521-0041	0400
330			ME5008		Mouthpiece	5							
331			ME5009		Mouthpiece	4							
332	ME5010	P	ME5010		Diaphragm 3	2					0.7 (2.5)		
333			ME5070		Pillar 2	1						521-0170	1300
334			ME5927		Name plate	1							
335			ME6346		Cover U	1							
336			ME6347		Cover F	1							
337			ME6372		Frame	1							
337			MF0236		Frame	1							
338			ME6373		F tray	1							
339			ME6374		K plate 1	1							
340			ME6375		Rear plate	1							
341			ME6376		Fixing plate	1							
341			MF0244		Fixing plate	1							
342			ME6377		Partition plate	1							
343			ME6378		P cover	1							
343			MF0245		P cover	1							
344			ME6379		P base	1						521-0124	0800
345			ME6380		D cover	1							
346			ME6381		R tray 1	1							
347			ME6382		Guide	1							
348			ME6383		Hook	1							
349			ME6384		Valve plate 2	1							
350			ME6385		Tank cover	1							
351			ME6386		Cover R	1							
352			ME6387		Rear cover	1							
353			ME6388		Front door R	1							
354			ME6389		Rear door	1							
355			ME6390		Right cover U	1							
356			ME6391		Window	1							
357			ME6392		Reinforcement plate	1							
358			ME6393		Receptacle	1							
359			ME6394		Pillar L	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
360			ME6395		Pillar R	1							
361			ME6396		Beam	1							
362			ME6397		Pillar cover	1							
363			ME6398		Pillar cover	1							
364			ME6399		F pillar 4	1							
365			ME6400		Rear cover	1							
366			ME6401		C base	1							
367			ME6403		CC cover	1							
368			ME6404		CB cover	1							
369			ME6405		DD duct 1	1							
370			ME6406		Right cover L	1							
371			ME6407		SW plate	1							
372			ME6408		Sesnor cover	1							
373			ME6409		Power supply plate	1							
373			MF0237		Power supply plate	1							
374			ME6410		Power supply plate	1							
374			MF0247		Power supply plate	1							
375			ME6411		K plate 2	1							
376			ME6412		PCB cover	1							
377			ME6413		Side cover	1							
378			ME6414		Cover 2	1							
379			ME6415		Cover 3	1							
380			ME6416		PCB plate	1							
381			ME6417		Support plate	1							
382			ME6418		Pump base	1							
383			ME6422		Box	1							
384			ME6423		Inside plate	1							
385			ME6424		Bottom plate	1							
386			ME6425		RP plate	1							
386			MF0243		RP plate	1							
387			ME6437		Cover	1							
388			ME6440		Cover	1							
389			ME6520		CA cover	1							
390			ME6537		Fixer B	1							
391			ME6724		DD duct 2	1							
392			ME6725		C base 2	1							
393			ME6729		ID base 1	1							
394			ME6730		ID base 2	1							
395			ME6731		Support plate	1							
396			ME6732		DC cover 1	1							
397			ME6733		DC cover 2	1							
398			ME6735		Pillar C	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
399			ME6736		Pillar C	2							
400			ME6737		Lifelon tube	0					Eliminated	521-0048	0600
401			ME6943		Support plate	1							
402			ME7139		Stay	2							
403			ME7191		S cap 1	3					Mold	521-0001	0400
404			ME7223		C base 2	1							
405			ME7224		Bottle	1							
406			ME7385		Cover B	1							
407			ME7492		Bracket 5	1							
408			ME7563		PCB cover	1							
409			ME7758		FG plate	3							
410			MU1693		Thermistor ass'y 1	1	DH128900		Connector pin	3			
411			MU1693		Thermistor ass'y 1	1	DK150000		Housing	1			
412			MU1693		Thermistor ass'y 1	1	DO001700		heat shrink tube				
413			MU1693		Thermistor ass'y 1	1	DO045400		Heat shrink tube				
414			MU1693		Thermistor ass'y 1	1	DT020400			1			
415	MU1693	P	MU1693		Thermistor ass'y 1	1	MU1693#						
416			MU2929		Valve ass'y 2	1	DH239000		Connector pin	2			
417			MU2929		Valve ass'y 2	1	DK432500		Housing	1			
418			MU2929		Valve ass'y 2	1	DM071400			1			
419	MU2929	P	MU2929		Valve ass'y 2	1	MU2929#						
420			MU2944		Valve ass'y 3	2	DH128900		Connector pin	2			
421			MU2944		Valve ass'y 3	2	DK121300		Housing	1			
422			MU2944		Valve ass'y 3	2	DM074000		EM valve	1			
423	MU2944	P	MU2944		Valve ass'y 3	2	MU2944#						
424			MU2945		Valve ass'y 4	1	DH128900		Connector pin	2			
425			MU2945		Valve ass'y 4	1	DK121300		Housing	1			
426			MU2945		Valve ass'y 4	1	DM069600		EM valve	1			
427	MU2945	P	MU2945		Valve ass'y 4	1	MU2945#						
428			MU2949		Valve ass'y 8	3	DH128900		Connector pin	2			
429			MU2949		Valve ass'y 8	3	DK121300		Housing	1			
430			MU2949		Valve ass'y 8	3	DM155800		EM valve	1			
431	MU2949	P	MU2949		Valve ass'y 8	3	MU2949#						
432			MU2950		Valve ass'y 9	1	DH128900		Connector pin	2			
433			MU2950		Valve ass'y 9	1	DK121300		Housing	1			
434			MU2950		Valve ass'y 9	1	DM155700		EM valve	1			
435	MU2950	P	MU2950		Valve ass'y 9	1	MU2950#						
436			MU2953		Fan ass'y 1	1	DH128900		Connector pin	2			
437			MU2953		Fan ass'y 1	1	DK121300		Housing	1			
438			MU2953		Fan ass'y 1	1	DM155100		AC fan	1			
439	MU2953	P	MU2953		Fan ass'y 1	1	MU2953#						
440			MU2961		Heater ass'y 3	1	DH021700			2			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
441			MU2961		Heater ass'y 3	1	DH029500		Connector pin	2			
442			MU2961		Heater ass'y 3	1	DH239000		Connector pin	2			
443			MU2961		Heater ass'y 3	1	DK432500		Housing	1			
444			MU2961		Heater ass'y 3	1	DO007100		Sleeve	2			
445			MU2961		Heater ass'y 3	1	DT060400			1			
446			MU2961		Heater ass'y 3	1	DY207400		thermostat	1			
447			MU2961		Heater ass'y 3	1	MA2665			1			
448			MU2961		Heater ass'y 3	1	MA2666			2			
449			MU2961		Heater ass'y 3	1	MA4967		Cap	2			
450			MU2961		Heater ass'y 3	1	MA7061		O ring	2			
451			MU2961		Heater ass'y 3	1	MD7790			1			
452			MU2961		Heater ass'y 3	1	MD7791		Lid 2	1			
453			MU2961		Heater ass'y 3	1	MD7795			1			
454			MU2961		Heater ass'y 3	1	MD9797		Mouthpiece	1			
455			MU2961		Heater ass'y 3	1	MD9811		pipe	1			
456			MU2961		Heater ass'y 3	1	MD9857			1			
457	MU2961	P	MU2961		Heater ass'y 3	1	MU2961#						
458			MU2961		Heater ass'y 3	1	MU3539			1			
459			MU2963		Float SW	2	DW410100			1			
460			MU2963		Float SW	2	DY200500		Float SW	1			
461	MU2963	P	MU2963		Float SW	2	MU2963#			1			
462			MU2964		Float SW	2	DW410100			1			
463			MU2964		Float SW	2	DY200600		Float SW	1			
464	MU2964	P	MU2964		Float SW	2	MU2964#			1			
465			MU2965		Float SW 4	1	DH128900		Connector pin	2			
466			MU2965		Float SW 4	1	DK121300		Housing	1			
467			MU2965		Float SW 4	1	DY200700		Float SW	1			
468	MU2965	P	MU2965		Float SW 4	1	MU2965#						
469			MU2967		Heater ass'y 1	1	DH021700			2			
470			MU2967		Heater ass'y 1	1	DH029500		Connector pin	2			
471			MU2967		Heater ass'y 1	1	DH239000		Connector pin	2			
472			MU2967		Heater ass'y 1	1	DK432500		Housing	1			
473			MU2967		Heater ass'y 1	1	DO007100		Sleeve	2			
474			MU2967		Heater ass'y 1	1	DT060300			1			
475			MU2967		Heater ass'y 1	1	DY207400		thermostat	1			
476			MU2967		Heater ass'y 1	1	MA2666			2			
477			MU2967		Heater ass'y 1	1	MA4967		Cap	2			
478			MU2967		Heater ass'y 1	1	MA7059			1			
479			MU2967		Heater ass'y 1	1	MA7060			2			
480			MU2967		Heater ass'y 1	1	MA7061		O ring	2			
481			MU2967		Heater ass'y 1	1	MA7066			1			
482			MU2967		Heater ass'y 1	1	MA7092		Nut	1			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
483			MU2967		Heater ass'y 1	1	MD7790			1			
484			MU2967		Heater ass'y 1	1	MD7792		Pipe	1			
485			MU2967		Heater ass'y 1	1	MD7794			1			
486			MU2967		Heater ass'y 1	1	MD9811		pipe	1			
487	MU2967	P	MU2967		Heater ass'y 1	1	MU2967#						
488			MU3223		M014-EF01	1	MA1880		Mouthpiece plate	4			
489			MU3223		M014-EF01	1	MA1881		Mouthpiece	4			
490			MU3223		M014-EF01	1	MA1882		R pipe	2			
491			MU3223		M014-EF01	1	MA1884		R block	1			
492			MU3223		M014-EF01	1	MU3223#						
493			MU3236		DIAG SW 2	1	DH128900		Connector pin	2			
494			MU3236		DIAG SW 2	1	DK121300		Housing	1			
495			MU3236		DIAG SW 2	1	DO012300		Heat shrink tube				
496			MU3236		DIAG SW 2	1	DW223000						
497			MU3236		DIAG SW 2	1	DY090400		Push button SW	1			
498	MU3236	P	MU3236		DIAG SW 2	1	MU3236#						
499			MU5943		Thermistor ass'y 2	1	DH128900		Connector pin	3			
500			MU5943		Thermistor ass'y 2	1	DK150000		Housing	1			
501			MU3255		Thermistor ass'y 2	1	DT060800		Thermistor	1	ITP100-19	521-0135	1100
501			MU5943		Thermistor ass'y 2	1	DT076800		Thermistor	1	ITP100-25	521-0135	1100
502	MU3255	P	MU3255		Thermistor ass'y 2	1	MU3255#					521-0135	1100
502	MU5943	P	MU5943		Thermistor ass'y 2	1	MU5943#					521-0135	1100
503			MU3532		Heater ass'y 4	1	DH021700			2			
504			MU3532		Heater ass'y 4	1	DH029500		Connector pin	2			
505			MU3532		Heater ass'y 4	1	DH239000		Connector pin	2			
506			MU3532		Heater ass'y 4	1	DK432500		Housing	1			
507			MU3532		Heater ass'y 4	1	DO007100		Sleeve	2			
508			MU3532		Heater ass'y 4	1	DT028900			1			
509			MU3532		Heater ass'y 4	1	DY207400		thermostat	1			
510			MU3532		Heater ass'y 4	1	MA2666			2			
511			MU3532		Heater ass'y 4	1	MA4967		Cap	2			
512			MU3532		Heater ass'y 4	1	MA7061		O ring	2			
513			MU3532		Heater ass'y 4	1	MD7791		Lid 2	1			
514			MU3532		Heater ass'y 4	1	MD7795			1			
515			MU3532		Heater ass'y 4	1	MD9797		Mouthpiece	2			
516			MU3532		Heater ass'y 4	1	MD9811		pipe	1			
517			MU3532		Heater ass'y 4	1	MD9859			1			
518			MU3532		Heater ass'y 4	1	MU3254			1	DT060900(ITP100-20)		
518			MU3532		Heater ass'y 4	1	MU6467			1	DT083700(ITP100-26)	521-0135	1100
519	MU3532	P	MU3532	B	Heater ass'y 4	1	MU3532#					521-0135	0800
520			MU3537		M520-EF01	1	DH021700			2			
521			MU3537		M520-EF01	1	DH128900		Connector pin	3			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
522			MU3537		M520-EF01	1	DH238700		Connector pin	4			
523			MU3537		M520-EF01	1	DH239000		Connector pin	6			
524			MU3537		M520-EF01	1	DK150000		Housing	1			
525			MU3537		M520-EF01	1	DK432500		Housing	1			
526			MU3537		M520-EF01	1	DK432600		Housing	1			
527			MU3537		M520-EF01	1	DK432800		Housing	1			
528			MU3537		M520-EF01	1	DO007100		Sleeve	2			
529			MU3537		M520-EF01	1	DT022800			2			
530			MU3537		M520-EF01	1	DT035600		Thermistor	1			
531			MU3537		M520-EF01	1	DW015900		WIRE AWG18 W				
532			MU3537		M520-EF01	1	DW016100		WIRE AWG18 H				
533			MU3537		M520-EF01	1	DY207400		thermostat	1			
534			MU3537		M520-EF01	1	MA1880		Mouthpiece plate	4			
535			MU3537		M520-EF01	1	MA1881		Mouthpiece	4			
536			MU3537		M520-EF01	1	MA1882		R pipe	2			
537			MU3537		M520-EF01	1	MA1884		R block	1			
538			MU3537		M520-EF01	1	MB3912		front panel	2			
539			MU3537		M520-EF01	1	MB3913		Top plate	1			
540			MU3537		M520-EF01	1	MB4188		holder	1			
541	MU3537	P	MU3537		M520-EF01	1	MU3537#						
542			MU4149		P ass'y 2	1	DH239000		Connector pin	2			
543			MU4149		P ass'y 2	1	DK432500		Housing	1			
544			MU4149		P ass'y 2	1	DM170300			1			
545	MU4149	P	MU4149		P ass'y 2	1	MU4149#						
546			MU4153		Valve ass'y 11	3	DH128900		Connector pin	2			
547			MU4153		Valve ass'y 11	3	DK121300		Housing	1			
548			MU4153		Valve ass'y 11	3	DM170400		EM valve	1			
549	MU4153	P	MU4153		Valve ass'y 11	3	MU4153#			1			
549	MU6188	P	MU6188		Valve ass'y 11	3	MU6188#			1	Japan worbrow SVA-3(DM2028), for V32, V29, V26	521-0047	0600
550			MU4730		Valve ass'y 12	1	DH128900		Connector pin	2			
551			MU4730		Valve ass'y 12	1	DK121300		Housing	1			
552			MU4730		Valve ass'y 12	1	DM179300		EM valve	1			
553	MU4730	P	MU4730		Valve ass'y 12	1	MU4730#			1			
553	MU6189	P	MU6189		Valve ass'y 12	1	MU6189#			1	Japan worbrow SVA-4(DM2027) for V23	521-0047	0600
554			MU6197		Pressure sensor #	1	DH128900		Connector pin	5		521-0052	0600
555			MU6197		Pressure sensor #	1	DK119100			1		521-0052	0600
556			MU6197		Pressure sensor #	1	DO045600		Heat shrink tube			521-0052	0600
557			MU6197		Pressure sensor #	1	DO097000					521-0052	0600
557			MU6197		Pressure sensor #	1	DO045300					521-0052	0600
557			MU6197		Pressure sensor #	1	DO121600					521-0052	0600
558			MU6197		Pressure sensor #	1	DT070000			1		521-0052	0600

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
559			MU6197		Pressure sensor #	1	ME4990		Joint	1		521-0052	0600
560			MU6197		Pressure sensor #	1	ME4998			1		521-0052	0600
561			MU6197		Pressure sensor #	1	ME4999		O ring	1		521-0052	0600
561			MU6197		Pressure sensor #	1	ME8525		O ring	1		521-0052	0600
562			MU4973		Pressure sensor #	1	MU4973#						
562	MU6197	P	MU6197		Pressure sensor #	1	MU6197#					521-0052	0600
563			MU4983		514 LED ass'y	2	DH128900		Connector pin	2			
564			MU4983		514 LED ass'y	2	DO045400		Heat shrink tube				
565			MU4983		514 LED ass'y	2	DQ099800		LED	1			
566			MU4983		514 LED ass'y	2	DR720100			1			
567			MU4983		514 LED ass'y	2	DW223000						
568	MU4983	P	MU4983		514 LED ass'y	2	MU4983#						
569			MU5000		Valve ass'y 6	6	DH128900		Connector pin	2			
570			MU5000		Valve ass'y 6	6	DK121300		Housing	1			
571			MU5000		Valve ass'y 6	6	DM187300		EM valve	1			
572	MU5000	P	MU5000		Valve ass'y 6	6	MU5000#						
572	MU5000	P	MU5000		Valve ass'y 6	6	MU5000#						
572	MU6910	P	MU6910		Valve ass'y 1	6	MU6910#				Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	521-0164	1200
572	MU5358	P	MU5358		Valve ass'y 6	6	MU5358#				Takasago MTV-2R-NM6G IN with 1 x ME5090	521-0089	0700
572	MU6913	P	MU6913		Valve ass'y 2	6	MU6913#				Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	521-0164	1200
572	MU5359	P	MU5359		Valve ass'y 6	6	MU5359#				Takasago MTV-2R-NM6G IN with2 x ME5090	521-0089	0700
572	MU6914	P	MU6914		Valve ass'y 3	6	MU6914#				Takasago MTV-2R-NM6G-11 IN with2 x ME5090	521-0164	1200
573			MU5001		Counter ass'y	1	DD027700		counter	1			
574			MU5001		Counter ass'y	1	DH128900		Connector pin	2			
575			MU5001		Counter ass'y	1	DK121300		Housing	1			
576			MU5001		Counter ass'y	1	MU5001#						
577			MU5003		514 pump ass'y	1	DH239000		Connector pin	2			
578			MU5003		514 pump ass'y	1	DK432500		Housing	1			
579			MU5003		514 pump ass'y	1	DM183200		DC pump	1			
579			MU6455		514 pump ass'y	1	DM215400		DC pump	1		521-0124	0800
580	MU5003	P	MU5003		514 pump ass'y	1	MU5003#						
580	MU6455	P	MU6455		514 pump ass'y	1	MU6455#				Iwaki RD-05V24-02	521-0124	0800
581			MU5004		Pressure SW ass'y	1	DH128900		Connector pin	3			
582			MU5004		Pressure SW ass'y	1	DK150000		Housing	1			
583			MU5004		Pressure SW ass'y	1	DO045600		Heat shrink tube				
584			MU5004		Pressure SW ass'y	1	DY235600			1			
585			MU5004		Pressure SW ass'y	1	ME5089		Mouthpiece	1			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
586	MU5004	P	MU5004		Pressure SW ass'y	1	MU5004#						
587			MU5011		514 valve ass'y	4	DH114900		Connector pin	2			
588			MU5011		514 valve ass'y	4	DH128900		Connector pin	2			
589			MU5011		514 valve ass'y	4	DK121300		Housing	1			
590			MU5011		514 valve ass'y	4	DM184200			1			
591			MU5011		514 valve ass'y	4	DW136400		WIRE AWG22 W				
592	MU5011	P	MU5011		514 valve ass'y	4	MU5011#						
593			MU5034		514 valve ass'y	7	DH114900		Connector pin	2			
594			MU5034		514 valve ass'y	7	DH128900		Connector pin	2			
595			MU5034		514 valve ass'y	7	DK121300		Housing	1			
596			MU5034		514 valve ass'y	7	DM179300		EM valve	1			
597			MU5034		514 valve ass'y	7	DW223000						
598	MU5034	P	MU5034		514 valve ass'y	7	MU5034#			1			
598	MU6190	P	MU6190		514 valve ass'y	7	MU6190#			1	Japan worbrow SVA-4(DM2027) for V16, V19, V10, V11, V12, V3, V4	521-0047	0600
599			MU5444#		M521-AA01								
600			MU5532		Valve ass'y	2	DH128900		Connector pin	2			
601			MU5532		Valve ass'y	2	DK121300		Housing	1			
602			MU5532		Valve ass'y	2	DM194000		EM valve	1			
603	MU5532	P	MU5532		Valve ass'y	2	MU5532#						
604			MU2962		Float SW	1					to MU5881	521-0007	
604	MU5881	P	MU5881		Float SW	1					OLV-25Z-4P ECN521-007 Old MU2962	521-0007	
605			MV0583		Cable	1							
606			MV1005	E	520BPHC1A	1							
606			MV1005	F	520BPHC1A	1							
606	MU3596	R	MV1005	G	520BPHC1A	1							
607	MU3597	P	MV1013		520BRFC1A	1							1100
608	MU3598	R	MV1014		520BMXC1A	2							
609			MV1019	F	520BANL1A	1							
609			MV1019	G	520BANL1A	1					(10G) for Noise add condenser	521-0159	1200
609	MU3602	R	MV1019	G	520BANL1A	1					(11G) Correct Artwork	521-0161	1200
610	MU3606	P	MV1024		AC driver	1							1100
611	MU3607	P	MV1025		520BCNC1A	2							
612	MU3589	P	MV1030	3.0	520PPR03	1							
613			MV1037	2.1	520PPR10	1							
613	MU3595	P	MV1037	2.2	520PPR10	1						521-0136	0800
614	MU3608	P	MV1051		520C0009	10							
615			MV1071		520C0029	3							
616			MV1072		520C0030	3							
617			MV1076		520C0034	1							
618			MV1077		520C0035	1							
619			MV1093		520C0051	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
620			MV1099		520C0057	1							
621			MV1100		520C0058	1							
622			MV1395		520C0070	2							
623			MV1402		520C0072	6							
624			MV1403		520C0073	2							
625			MV1553		520C0076	1							
626			MV1554		520C0077	2							
627	MU4659	P	MV1950		EF TEMP. CTRL PCB	1							1100
628	MU4660	P	MV1951		520BTMC8A	1						521-0120	0800
629			MV1983		Resistance ass'y	1							
630	MU4731	P	MV1986		520BTMCAA	1							1100
631	MU5352	P	MV2067		514BNCS1A	1							
632	MU5195	P	MV2074		514BCPU1A	1							1100
633	MU5354	P	MV2181		514PPR10	1							
634	MU5525	P	MV2344		521BRSC1A	1							1100
635	MU5526	P	MV2345		521BRBC1A	1							1100
636	MU5527	P	MV2346		521BDSC1A	1							1100
637			MV2348	1.0	521PPR01	1							
637	MU5518	P	MV2348	1.1	521PPR01	1							
638	MU5519	P	MV2349	1.0	521PPR02	1							
639	MU5520	P	MV2350	1.0	521PPR03	1							
640	MU5522	P	MV2352	1.0	521PPR05	1							
641	MU5523	P	MV2353	1.0	521PPR06	2							
642			MV2555		521H0001	1							
643			MV2556		521H0002	1							
644			MV2557		521H0003	1							
645			MV2558		521H0004	1							
646			MV2577		521C0040	1							
647	MU5524	P	MV2611	1.0	521PPR07	1							
648			MV2711		521C0048	3							
649			MF0239		V base	1							
651		P	MF0240		Diaphragm 0.8	1							
652			MF0246		Reducer	2							
653			MF0287		Reducer	2						521-0124	0800
654	MU6830	P	MU6830		Harness fix #						FA/FD cable failure	521-0132	1100

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS416100	P	DS416100		Photo reflector	2					Japan Arefu OH-101202-701		
2			GB5801		Spacer	2							
3			MA2561		Name plate	1							
4			MB1973		Cord fixer	7							
5			MB9808		EC label	1							
6	MD7152	P	MD7152		Feed plate	65					CA caterpillar		
6	MF0227	P	MF0227		Bush	130						521-0169	1200
6	MF0226	P	MF0226		Feed plate	65						521-0169	1200
7			MD7395		Roller shaft	1							
8			MD7396		Roller	1							
9			MD7397		Pillar	3							
10			MD7399		Drive wheel	1							
11			MD7400		Sprocket	2							
12			MD7401		Pillar B	8							
13			ME1040		Supporting plate	1							
14			ME4880		Slide plate 2	1							
15			ME4881		PCB receptacle	1							
16	ME4882	P	ME4882		Spacer 1	3							
17			ME4883		Sensor plate	1							
18			ME4886		LED plate	1							
19			ME4933		Sensor plate 2	2							
20			ME5825		Sensor plate	2					ERCCode No.8813770Degasser tank		
21			ME6454		Rack base	1							
21			MF0254		Rack base	1							
22			ME6455		S base 1	1							
23			ME6456		S base 2	1							
23			MF0255		S base 2	1							
24			ME6457		S base 3	1							
25			ME6458		Support plate	1							
26			ME6459		Support plate	1							
27			ME6460		Slide plate 1	1							
27			MF0248		Slide plate 1	1							
28			ME6461		Protecting tape	1							
29			ME6463		plate	1							
30			ME6464		Motor base	1							
31			ME6465		Fixing plate	1							
31			MF0249		Fixing plate	1							
32			ME6466		Slide plate 3	1							
32			MF0251		Slide plate	1							
32			MF0250		Slide plate 3	1							
33			ME6467		plate 2	1							
33			MF0253		plate 3	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
33			MF0252		plate 2	1							
34			ME6468		Sensor plate 3	1							
35			ME6469		Cover plate	1							
36			ME6794		Hinge L	1							
37			ME6795		Hinge R	1							
38			ME7494		Base fixation	1							
39			MU2811		Photo sensor	2	DH128900		Connector pin	3			
40			MU2811		Photo sensor	2	DK120300		Housing	1			
41			MU2811		Photo sensor	2	DO001800		Heat shrink tube				
42			MU2811		Photo sensor	2	DO002000		Heat shrink tube				
43			MU2811		Photo sensor	2	DO067100			2			
44			MU2811		Photo sensor	2	DS105500		Photo interrupter	1			
45			MU2811		Photo sensor	2	DW171000						
46			MU2811		Photo sensor	2	DW222900						
47			MU2811		Photo sensor	2	DW223000						
48			MU2811		Photo sensor	2	MB9873		tack	1			
49	MU2811	P	MU2811		Photo sensor	2	MU2811#						
50			MU4094		520 PM ass'y	1	DH114900		Connector pin	6			
51			MU4094		520 PM ass'y	1	DH128900		Connector pin	6			
52			MU4094		520 PM ass'y	1	DK119100		Housing	1			
53			MU4094		520 PM ass'y	1	DM128800		pulse motor	1			
54			MU4094		520 PM ass'y	1	DW136400		WIRE AWG22 W				
55			MU4094		520 PM ass'y	1	MU4094#						
56			MU5009		514 LED ass'y	1	DH128900		Connector pin	2			
57			MU5009		514 LED ass'y	1	DK121300		Housing	1			
58			MU5009		514 LED ass'y	1	DO045400		Heat shrink tube				
59			MU5009		514 LED ass'y	1	DQ056800		LED	1			
60			MU5009		514 LED ass'y	1	DR720100			1			
61			MU5009		514 LED ass'y	1	DW223000						
62	MU5009	P	MU5009		514 LED ass'y	1	MU5009#						
63			MU5445#		M521-CA01								
63	MU5496	R	MU5445#	C	M521-CA01								
64	MV0840	P	MV0840		915BLSW1A	1							
65			MV2360		521C0005	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-CB01(MU5446)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS320400	P	DS320400		Photo reflector	1							
2	DS378800	P	DS378800		Photo reflector	1					Matsushita electric 'PM2-LL10B		
3	DS416100	P	DS416100		Photo reflector	10					Japan Arefu OH-101202-701		
4	DZ235500	P	DZ235500		Barcode reader	1					Olympus SymbolLSK6220-I2B0JG		1100
5			GB5641		Bearing	2							
6			GB9852		Roller	3							
7			MA2561		Name plate	1							
8			MA7553		Bearing	6							
9			MA8189		Pin	1							
10			MB1973		Cord fixer	3							
11			MB7485		Plate	2							
12			MB7486		Pillar C	2							
13			MB7487		Spacer	2							
14			MB9808		EC label	1							
15			MD7071		Belt	1							
16	MD7072	P	MD7072		Roller	1							
17			MD9805		Pillar C	3							
18			MD9809		Pillar C	4							
19	MU5541		ME1626		J brush	1							
20			ME2646		Tape	1							
21			ME5381		Sensor base	1							
22			ME5734		Mirror	1							
23			ME6470		Guide	1							
24			ME6471		Belt base	1							
25			ME6472		Belt guide	1							
26			ME6473		ID base	1							
27			ME6474		Sensor plate	1							
28			ME6475		Sensor plate 2	1							
29			ME6476		Unit supporter 1	1							
30			ME6477		Unit supporter 2	1							
31			ME6478		Bracket	1							
32			ME6479		Mirror plate	1							
33			ME7545		Brush receiver	1							
34	MU5541		ME7546		Brush AD	1							
35			ME7803		Fixing screw	1							
36			MU5014		514 PM ass'y 3	1	DH128900		Connector pin	6			
37			MU5014		514 PM ass'y 3	1	DK119100		Housing	1			
38			MU5014		514 PM ass'y 3	1	DM128800		pulse motor	1			
39	MU5014	P	MU5014		514 PM ass'y 3	1	MU5014#				Oriental PK268-02A		
39	MU6787	P	MU6787		514 PM ass'y 3	1	MU5014#				Sanyo 103H7126-0447	521-0133	1100
40	MU5497	R	MU5446#		M521-CB01								
40	MU5497	R	MU5446#	C	M521-CB01							521-0133	1100
41	DS353800	P	MU5511		M521-CG01	1	DS353800		Photo interrupter	1			
42			MU5511		M521-CG01	1	MA2561		Name plate	1			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			MU5511		M521-CG01	1	MA3314		Spring	2			
44			MU5511		M521-CG01	1	MB0993			2			
45			MU5511		M521-CG01	1	MB1464		Bearing	4			
46			MU5511		M521-CG01	1	MB3058		Collar 3	1			
47			MU5511		M521-CG01	1	MB9808		EC label	1			
48			MU5511		M521-CG01	1	MD3492		Cam	1			
49			MU5511		M521-CG01	1	MD7404		Lever	2			
50			MU5511		M521-CG01	1	MD7442		Spring rack	1			
51			MU5511		M521-CG01	1	ME4678			3			
52			MU5511		M521-CG01	1	ME4679			1			
53			MU5511		M521-CG01	1	ME5808		Sensor plate	1			
54			MU5511		M521-CG01	1	ME6538		Motor table	1			
55			MU5511		M521-CG01	1	ME6539			1			
56	MU2911	P	MU5511		M521-CG01	1	MU2911			1			
56	MU5042	P	MU5042		514 PM ass'y 3	1	MU5042#				Common to AU400	521-0105	0700
57	MU5513	P	MU5511		M521-CG01	1	MU5511#						
58	DS353800	P	MU5512		M521-CG02	1	DS353800		Photo interrupter	1			
59			MU5512		M521-CG02	1	MA2561		Name plate	1			
60			MU5512		M521-CG02	1	MA3314		Spring	2			
61			MU5512		M521-CG02	1	MB0993			2			
62			MU5512		M521-CG02	1	MB1464		Bearing	4			
63			MU5512		M521-CG02	1	MB3058		Collar 3	1			
64			MU5512		M521-CG02	1	MB9808		EC label	1			
65			MU5512		M521-CG02	1	MD3492		Cam	1			
66			MU5512		M521-CG02	1	MD7404		Lever	2			
67			MU5512		M521-CG02	1	MD7442		Spring rack	1			
68			MU5512		M521-CG02	1	ME4678			3			
69			MU5512		M521-CG02	1	ME4679			1			
70			MU5512		M521-CG02	1	ME6541		Motor table	1			
71			MU5512		M521-CG02	1	ME7538		Sensor plate	1			
72	MU2911	P	MU5512		M521-CG02	1	MU2911			1			
72	MU5042	P	MU5042		514 PM ass'y 3	1	MU5042#				Common to AU400	521-0105	0700
73	MU5514	P	MU5512		M521-CG02	1	MU5512#						
74			MV2367		521C0012	1							
75			MV2369		521C0014	1							
76	MU8169	C	MU5541		SE brush		MU5541#						0400
77			MV3002		FG cable							521-0079	0700

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	1					Japan ArefuOL-EE-SH3		
2	DS415300	P	DS415300		Photo reflector	2					Japan Arefu 'OH-102201-704		
3			GB6076		Bearing	2							
4			GB6135		Pipe	3							
5			MA2386		Fixer	3							
6			MA2561		Name plate	1							
7			MA3197		Spring rack	2							
8			MA5903		Spacer	2							
9			MA9089		Bearing	2							
10			MB1973		Cord fixer	10							
11			MB9808		EC label	1							
12			ME3502		Spring A	2							
13			ME4932		Pulley 16C	2							
14			ME5102		Spacer 2	2							
15			ME6481		Rack base	1							
16			ME6482		S base	1							
17			ME6483		Slide plate	1							
18			ME6484		Slide plate 2	1							
19			ME6485		Fixing plate	1							
20			ME6486		Slide plate 3	1							
21			ME6487		Slide plate 4	1							
22			ME6488		Slide plate 5	1							
23			ME6489		S base 1	1							
24			ME6490		Cable guide	1							
25			ME6491		S base 2	1							
26			ME6492		Slide pack	1							
27	ME6493	P	ME6493		Belt	1					Three stars 100S3M1419		
28			ME6494		Pulley shaft	1							
29			ME6495		Pulley fixer	1							
30			ME6496		lever base	1							
31			ME6497		Lever	1							
32			ME6498		Base 1	1							
33			ME6499		S base receiver	1							
34			ME6500		S base	1							
35			ME6501		Sensor plate 1	1							
36			ME6502		Sensor plate 2	1							
37			ME6504		Stopper 2	1							
38			ME6505		Senso plate 6r	1							
39			ME6506		Belt fixer 2	1							
40			ME6507		Sensor flag	1							
41			ME6508		Sensor plate 3	2							
42			ME6509		Shaft base 1	1							
43			ME6510		Shaft base 2	1							
44			ME6511		Shaft	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
44			ME8489		Shaft	1					Same as ME6511		0600
45			ME6512		Block	1							
46			ME6514		Arm	1							
47			ME6516		Harness guide	1							
48			ME6517		Sensor plate 5	1							
49			ME6518		Sensor plate 7	1							
50			ME6530		Base holder 1	1							
51			ME6540		Slide plate 6	1							
52			ME6542		Motor base	1							
53			ME6693		Support plate	1							
54			ME6694		Pillar A	2							
55			ME6695		Base holder 2	1							
56			ME6696		Base holder 3	1							
57			ME6697		Stopper 3	1							
58			ME7359		UD block	1							
59			ME7360		UD pin	1							
60			ME7361		tube stopper	1							
61			ME7362		Cover receiver	1							
62			ME7363		Collar	4							
63			ME7495		Base holder 4	2							
64			ME7500		plate	1							
65			MU1014		Photo sensor	3	DH114200		Connector pin				
66			MU1014		Photo sensor	3	DH128900		Connector pin	3			
67			MU1014		Photo sensor	3	DK120300		Housing	1			
68			MU1014		Photo sensor	3	DO001800		Heat shrink tube				
69			MU1014		Photo sensor	3	DO002000		Heat shrink tube				
70			MU1014		Photo sensor	3	DO067100			2			
71			MU1014		Photo sensor	3	DS117500		Photo interrupter	1			
72			MU1014		Photo sensor	3	DW171000						
73			MU1014		Photo sensor	3	DW222900						
74			MU1014		Photo sensor	3	DW223000						
75			MU1014		Photo sensor	3	MB7214			1			
76	MU1014	P	MU1014		Photo sensor	3	MU1014#						
77			MU4094		520 PM ass'y	1	DH114900		Connector pin	6			
78			MU4094		520 PM ass'y	1	DH128900		Connector pin	6			
79			MU4094		520 PM ass'y	1	DK119100		Housing	1			
80			MU4094		520 PM ass'y	1	DM128800		pulse motor	1			
81			MU4094		520 PM ass'y	1	DW136400		WIRE AWG22 W				
82	MU4094	P	MU4094		520 PM ass'y	1	MU4094#						
82	MU2923	P	MU2923		520 PM ass'y	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
82	MU6787	P	MU6787		520 PM ass'y	1	MU6787#				Sanyo 103H7126-0447	521-0134	1100
83			MU5447	C	M521-CC01							521-0006	0400
83			MU5447	E	M521-CC01		MU5447		M521-CC01	CC		521-0044	0600
83	MU5498	R	MU5447	E	M521-CC01		MU5447		M521-CC01	CC		521-0134	1100

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
84			MU5531		S cable ass'y	1	ME6519		coil	1			
85	MU5531	P	MU5531		S cable ass'y	1	MU5531#						
86			MU5531		S cable ass'y	1	MV2560			1			
87			MU5531		S cable ass'y	1	MV2562			1			
88			MU5535		Reed SW ass'y	1	DH128900		Connector pin	2			
89			MU5535		Reed SW ass'y	1	DK121300		Housing	1			
90			MU5535		Reed SW ass'y	1	DY201200			1			
91			MU5535		Reed SW ass'y	1	MU5535#						
92			MU5547		Shaft ass'y	1	DH128900		Connector pin	2			
93			MU5547		Shaft ass'y	1	DK121300		Housing	1			
94			MU5547		Shaft ass'y	1	DM198300		solenoid	1			
95	MU5547	P	MU5547		Shaft ass'y	1	MU5547#						
95	MU6179	P	MU6179		Shaft ass'y 2					CC	#219 and after	521-0044	0600
96			MV2561		521C0024	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-CD01(MU5448)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	3					Japan ArefuOL-EE-SH3		
2	DS378800	P	DS378800		Photo reflector	3					Matsushita electric 'PM2-LL10B		
3			GB8046		Collar	1							
4			MA2561		Name plate	1							
5			MB1973		Cord fixer	7							
6			MB3279		Bearing	2							
7			MB9808		EC label	1							
8			ME4932		Pulley 16C	2							
9			ME5220		Sensor plate	2							
10	ME6493	P	ME6493		Belt	1					Three stars 100S3M1419		
11			ME6503		Stopper 1	2							
12			ME6506		Belt fixing 2	1							
13			ME6521		Base	1							
14			ME6522		Rack guide	1							
15			ME6523		Slide bag	1							
16			ME6524		Drive base	1							
17			ME6525		Belt fixing 1	1							
18			ME6527		Lever	1							
19			ME6528		Sensor plate 1	2							
20			ME6529		Sensor plate 2	1							
21			ME6531		Pulley base	1							
22			ME6728		Pulley shaft	1							
23			ME6825		Sensor plate 3	1							
24			MU2912		520 PM ass'y 4	1	DH114900		Connector pin	6			
25			MU2912		520 PM ass'y 4	1	DH128900		Connector pin	6			
26			MU2912		520 PM ass'y 4	1	DK119100		Housing	1			
27			MU2912		520 PM ass'y 4	1	DM083600		Pulse motor	1			
28			MU2912		520 PM ass'y 4	1	DW136400		WIRE AWG22 W				
29	MU2912	P	MU2912		520 PM ass'y 4	1	MU2912#			1			
29	MU3755	P	MU3755		PM ass'y	1	MU3755#			1	Oriental Motor PH266-01(Common part)	521-0111	0700
30	MU5499	P	MU5448#		M521-CD01								
31			MV2184		514C0052	1							
32			MV2567		521C0030	1							
33			MV2568		521C0031	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-CE01(MU5449)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	2					Japan ArefuOL-EE-SH3		
2			MA2561		Name plate	1							
3			MA3409		Bearing	4							
4			MB1973		Cord fixer	1							
5			MB8039		Spacer	2							
6			MB9808		EC label	1							
7			MD9806		Pillar C	2							
8			MD9807		Pillar C	1							
9			ME2244		Thrust receptacle	3							
10			ME6532		M base	1							
11			ME6533		Fixer	1							
12			ME7535		Stopper 1	1							
13			ME7536		Stopper 2	1							
14			ME7537		Sensor plate	2							
15			ME7543		Detection plate	1							
16			ME7544		Cam	1							
17			MU5016		514 PM ass'y 4	1	DH128900		Connector pin	6			
18			MU5016		514 PM ass'y 4	1	DK119100		Housing	1			
19			MU5016		514 PM ass'y 4	1	DM083600		Pulse motor	1			
20	MU5016	P	MU5016		514 PM ass'y 4	1	MU5016#				Oriental Motor PH266-01		
20	MU3755	P	MU3755		PM ass'y	1	MU3755#			1	Oriental Motor PH266-01(Common part)	521-0111	0700
21	MU5500	P	MU5449#		M521-CE01								
22			MV2373		521C0018	1							

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-CH01(MU5450)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS416100	P	DS416100		Photo reflector	1					Japan Arefu OH-101202-701		
2			MA2561		Name plate	1							
3			MA6540		Collar	1							
4			MB9808		EC label	1							
5			ME1519		Lever	1							
6			ME1520		Twist spring	1							
7			ME5803		Lever table	1							
8			ME6534		Rack base	1							
9			ME6535		Rack guide	1							
10			ME6536		Mounting L	1							
11			MU5450#		M521-CH01								

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-DA01(MU5460)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	2					Japan ArefuOL-EE-SH3		
2	DZ195300	R	DZ195300		Barcode reader	1					Olympus 'LSK6220-A		
3			GB8052		Spacer	3							
4			LP3211		15ND-40	1							
5			MA0134		Washer	1							
6			MA2561		Name plate	1							
7			MA7664		Lifelon tube	1							
8			MB1500		Spacer 2	3							
9			MB1973		Cord fixer	3							
10			MB9808		EC label	1							
11			MD1260		C16.7	2							
12			MD7268		Base	1					#0060407-	521-0106	0700
13			MD7270		Reinforcement plate	1							
14			MD7271		Post	3							
15			MD7272		Pipe	1							
16			MD7273		Ring R1	1							
17			MD7274		Pin	2							
18			MD7275		Window frame	1							
19			MD7276		Window	1							
20			MD7277		ID receiver	1							
21			MD7279		Sensor plate	1							
22			MD7280		Sensor plate	1							
23			MD7281		Prop	1							
24			MD7282		Sensor base	1							
25			MD7283		Sensor plate	1							
26			MD7284		Cap	1							
27			MD7285		Bearing								
27			MF0076		Bearing	2					Change Bearling	521-0106	0700
28			MD7286		Collar	1					Vinyl chloride -> Aluminum	521-0155	1200
28			MD7286		Collar	1					Vinyl chloride -> Aluminum	526-0023	1200
29			MD7287		Rotation shaft	1							
30			MD7288		Tray receptacle	1							
31			MD7289		Gear A	1							
32			MD7290		Gear B	1							
33			MD7291		Stud	3							
34			MD7292		Disk	1							
35			MD7293		Plug	1							
36			MD7294		Lid	1							
37			MD7295		Cover	1							
38			MD7299		Heat insulation	1							
39			MD7300		Heat insulation	10							
40			MD7303		Heat insulation	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			MD7464		Lifelon tube	1							
42			MD7539		Heat insulation	1							
43			MD7540		Heat insulation	1							
44			MD7541		Heat insulation	1							
45			MD7542		Heat insulation	1							
46			MD7544		Heat insulation	1							
47			MD7545		Heat insulation	1							
48			MD7546		Heat insulation	1							
49			MD7547		Heat insulation	1							
50			MD7548		Ring 11	1							
51			MD7549		Ring 12	1							
52			MD7552		Heat insulation	1							
53			MD7554		Heat insulation	1							
54			MD7555		Heat insulation	1					ECN521-0173 940->1100	521-0173	1300
54			MD7555		Heat insulation	1					ECN526-0049 940->1100	526-0049	1300
55			MD9556		Sensor plate	1							
56			MD9572		Sensor plate	1							
57			MD9799		H insulator	5							
58			MD9801		T insulator	2							
59			MD9802		T insulator	2							
60			MD9804		T insulator	1							
61			MD9854		Ring	1							
62			ME4148		Packing	1							
63			ME4149		Film	1							
64			ME4150		Packing	1							
65			ME5132		Sensor plate	1							
66			ME6453		Hangar	1							
67			ME7249		Sensor base	1							
68			MU2912		520 PM ass'y	1	DH114900		Connector pin	6			
69			MU2912		520 PM ass'y	1	DH128900		Connector pin	6			
70			MU2912		520 PM ass'y	1	DK119100		Housing	1			
71			MU2912		520 PM ass'y	1	DM083600			1			
72			MU2912		520 PM ass'y	1	DW136400		WIRE AWG22 W				
73	MU2912	P	MU2912		520 PM ass'y	1	MU2912#			1			
73	MU3755	P	MU3755		PM ass'y	1	MU3755#				Oriental Motor PH266-01(Common part)	521-0111	0700
73	MU4979	P	MU4979		520 PM ass'y	1	MU4979#			1	Oriental Motor PH268-01A Common with AU400	521-0106	0700
74			MU2920		520 sensor ass'y 1	1	DH128900		Connector pin	5			
75			MU2920		520 sensor ass'y 1	1	DK121300		Housing	1			
76			MU2920		520 sensor ass'y 1	1	DK150000		Housing	1			
77			MU2920		520 sensor ass'y 1	1	DS373400		Photo interrupter	1			
78	MU2920	P	MU2920		520 sensor ass'y 1	1	MU2920#			1			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
79			MU2921		520 sensor ass'y 2	1	DH128900		Connector pin	2			
80			MU2921		520 sensor ass'y 2	1	DK121300		Housing	1			
81			MU2921		520 sensor ass'y 2	1	DY201200			1			
82			MU2921		520 sensor ass'y 2	1	DY201300		Magnet	1			
83	MU2921	P	MU2921		520 sensor ass'y 2	1	MU2921#						
84			MU2991		Heater ass'y 2	1	DH128900		Connector pin	2			
85			MU2991		Heater ass'y 2	1	DK121300		Housing	1			
86			MU2991		Heater ass'y 2	1	DT060200			1			
87			MU2991		Heater ass'y 2	1	DW136400		WIRE AWG22 W				
88			MU2991		Heater ass'y 2	1	MU2991#						
89			MU3206		520 sensor ass'y 4	1	DH128900		Connector pin	3			
90			MU3206		520 sensor ass'y 4	1	DK150000		Housing	1			
91			MU3206		520 sensor ass'y 4	1	DS086700		Photo interrupter	1			
92	MU3206	P	MU3206		520 sensor ass'y 4	1	MU3206#						
93			MU5943		Thermistor ass'y 2	1	DH128900		Connector pin	3			
94			MU5943		Thermistor ass'y 2	1	DK150000		Housing	1			
95			MU5943		Thermistor ass'y 2	1	DT083700		Thermistor	1		521-0135	0800
96	MU5943	P	MU5943		Thermistor ass'y	1	MU5943#						
97			MU5460#	D	M521-DA01						REP, Bearling	521-0106	0700
97	MU6424	R	MU5460#	E	M521-DA01						REP, Bearling	521-0135	1100
98			MV1074		520C0032	1							
99			MV2565		521C0028	1							
100			MU3578	A	Window ass'y 1							521-0081	0700
100	MU3578	P	MU3578	B	Window ass'y 1							521-0081	0700
101	MU9604	C	MU9604		R tray 48	1							0600
101	MU9604	C	MU5802		R tray 48	1	ME9359			40			
101	MU9604	C	MU5802		R tray 48	1	ME6995			1			
102	ME0370	P	ME0370		Latch	3						521-0039	0600
103	MU8122	C	MU5954		15ml bottle set						20 x 15ml bottle	521-0026	0600
104			ME9669		H plate	1					#0070422	521-0081	0700
105	MU6878	P	MU6878		DA adjust kit						MD7286+MF1575+ME4148+MD7272+2 x ME8463	521-0155	1200
105	MU6878	P	MU6878		DA adjust kit						MD7286+MF1575+ME4148+MD7272+2 x ME8463	526-0023	1200

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-DA11(MU5461)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	2					Japan ArefuOL-EE-SH3		
2	DZ195300	R	DZ195300		Barcode reader	1					Olympus 'LSK6220-A		
3			GB8052		Spacer	3							
4			LP3211		15ND-40	1							
5			MA0134		Washer	1							
6			MA2561		Name plate	1							
7			MA7664		Lifelon tube	1							
8			MB1500		Spacer 2	3							
9			MB1973		Cord fixer	3							
10			MB9808		EC label	1							
11			MD1260		C16.7	2							
12			MD7269		Base	1					#0060407-	521-0078	0700
13			MD7270		Reinforcement plate	1							
14			MD7271		Post	3							
15			MD7272		Pipe	1							
16			MD7278		Ring R	1							
17			MD7274		Pin	2							
18			MD7275		Window frame	1							
19			MD7276		Window	1							
20			MD7277		ID receiver	1							
21			MD7279		Sensor plate	1							
22			MD7280		Sensor plate	1							
23			MD7281		Prop	1							
24			MD7282		Sensor base	1							
25			MD7283		Sensor plate	1							
26			MD7284		Cap	1							
27			MD7285		Bearing								
27			MF0076		Bearing	2					Change Bearling	521-0106	0700
28			MD7286		Collar	1					Vinyl chloride -> Aluminum	521-0155	1200
28			MD7286		Collar	1					Vinyl chloride -> Aluminum	526-0023	1200
29			MD7287		Rotation shaft	1							
30			MD7288		Tray receptacle	1							
31			MD7289		Gear A	1							
32			MD7290		Gear B	1							
33			MD7291		Plate	3							
34			MD7292		Disk	1							
35			MD7293		Plug	1							
36			MD7294		Lid	1							
37			MD7295		Cover	1							
38			MD7299		Heat insulation	1							
39			MD7300		Heat insulation	10							
40			MD7303		Heat insulation	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			MD7464		Lifelon tube	1							
42			MD7539		Heat insulation	1							
43			MD7540		Heat insulation	1							
44			MD7541		Heat insulation	1							
45			MD7542		Heat insulation	1							
46			MD7544		Heat insulation	1							
47			MD7545		Heat insulation	1							
48			MD7546		Heat insulation	1							
49			MD7547		Heat insulation	1							
50			MD7550		Ring 21	1							
51			MD7551		Ring 22	1							
52			MD7552		Heat insulation	1							
53			MD7554		Heat insulation	1							
54			MD7555		Heat insulation	1					ECN521-0173 940->1100	521-0173	1300
54			MD7555		Heat insulation	1					ECN526-0049 940->1100	526-0049	1300
55			MD9556		Sensor plate	1							
56			MD9572		Sensor plate	1							
57			MD9799		H insulator	6							
58			MD9803		T insulator	1							
59			MD9802		T insulator	2							
60			MD9804		T insulator	1							
61			MD9854		Ring	1							
62			ME4148		Packing	1							
63			ME4149		Film	1							
64			ME4150		Packing	1							
65			ME5132		Sensor plate	1							
66			ME6453		Hangar	1							
67			ME7249		Sensor base	1							
68			MU2912		520 PM ass'y	1	DH114900		Connector pin	6			
69			MU2912		520 PM ass'y	1	DH128900		Connector pin	6			
70			MU2912		520 PM ass'y	1	DK119100		Housing	1			
71			MU2912		520 PM ass'y	1	DM083600			1			
72			MU2912		520 PM ass'y	1	DW136400		WIRE AWG22 W				
73	MU2912	P	MU2912		520 PM ass'y	1	MU2912#			1			
73	MU3755	P	MU3755		PM ass'y	1	MU3755#				Oriental Motor PH266-01(Common part)	521-0111	0700
73	MU4979	P	MU4979		520 PM ass'y	1	MU4979#			1	Oriental Motor PH268-01A Common with AU400	521-0106	0700
74			MU2920		520 sensor ass'y 1	1	DH128900		Connector pin	5			
75			MU2920		520 sensor ass'y 1	1	DK121300		Housing	1			
76			MU2920		520 sensor ass'y 1	1	DK150000		Housing	1			
77			MU2920		520 sensor ass'y 1	1	DS373400		Photo interrupter	1			
78	MU2920	P	MU2920		520 sensor ass'y 1	1	MU2920#			1			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
79			MU2921		520 sensor ass'y 2	1	DH128900		Connector pin	2			
80			MU2921		520 sensor ass'y 2	1	DK121300		Housing	1			
81			MU2921		520 sensor ass'y 2	1	DY201200			1			
82			MU2921		520 sensor ass'y 2	1	DY201300		Magnet	1			
83	MU2921	P	MU2921		520 sensor ass'y 2	1	MU2921#						
84			MU2991		Heater ass'y 2	1	DH128900		Connector pin	2			
85			MU2991		Heater ass'y 2	1	DK121300		Housing	1			
86			MU2991		Heater ass'y 2	1	DT060200			1			
87			MU2991		Heater ass'y 2	1	DW136400		WIRE AWG22 W				
88			MU2991		Heater ass'y 2	1	MU2991#						
89			MU3206		520 sensor ass'y 4	1	DH128900		Connector pin	3			
90			MU3206		520 sensor ass'y 4	1	DK150000		Housing	1			
91			MU3206		520 sensor ass'y 4	1	DS086700		Photo interrupter	1			
92	MU3206	P	MU3206		520 sensor ass'y 4	1	MU3206#						
93			MU5943		Thermistor ass'y 2	1	DH128900			3			
94			MU5943		Thermistor ass'y 2	1	DK150000			1			
95			MU5943		Thermistor ass'y 2	1	DT060800			1			0800
96	MU5943	P	MU5943		MU5943#	1							0800
97			MU5461#		M521-DA11						REP, Bearling	521-0107	0700
97	MU6425	R	MU5461#	D	M521-DA11						REP, Bearling	521-0107	0700
98			MV1074		520C0032	1							
99			MV2565		521C0028	1							
100			MU3578	A	Window ass'y							521-0081	0700
100	MU3578	P	MU3578	B	Window ass'y							521-0081	0700
101	MU9604	C	MU9604		R tray 48	1							0600
101	MU9604	C	MU5802		R tray 48	1	ME9359			40			
101	MU9604	C	MU5802		R tray 48	1	ME6995						
102	ME0370	P	ME0370		Latch	3						521-0039	0600
103	MU8122	C	MU5954		15ml bottle set						20 x 15ml bottle	521-0026	0600
104			ME9669		H plate	1					#0070422	521-0081	0700
105	MU6878	P	MU6878		DA adjust kit						MD7286+MF1575+ME4148+MD7272+2 x ME8463	521-0155	1200
105	MU6878	P	MU6878		DA adjust kit						MD7286+MF1575+ME4148+MD7272+2 x ME8463	526-0023	1200

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-DB01(MU5451)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DX048900	P	DX048900		SSR	1					OmronG3NA-D210B DC5-24		
2			MA2561		Name plate	1							
3			MA5107		Lifelon tube	1							
4			MB0020		T tube	1					For 12mm tube		
5			MB1973		Cord fixer	3							
6			MB9808		EC label	1							
7			MD0007		Lifelon tube	2							
8			MD1259		C16.7	2							
9			MD1260		C16.7	6							
10			MD9570		P insulator 1	1							
11			MD9571		P insulator 2	1							
12			MD9572		Sensor plate	3							
13			MD9573		T insulator 2	1							
14			MD9574		T insulator 3	1							
15			MD9575		PCB base	1							
16			MD9799		H insulator	8							
17			MD9856		Stopper	1							
18			ME0213		T insulator 4	1							
19			ME0214		Lifelon tube	1							
20			ME5225		PCB plate	1							
21			ME5226		Pump plate	1							
22			ME6442		P base	1							
23			MU3609		Peltier ass'y	1	MA7066			2			
24			MU3609		Peltier ass'y	1	MB9808		EC label	1			
25			MU3609		Peltier ass'y	1	MD7258		Plate	1			
26			MU3609		Peltier ass'y	1	MD9569		Heat insulation	1			
27			MU3609		Peltier ass'y	1	MU3202		Peltier cooling unit	1			
28			MU3629	C	Peltier ass'y		MU3609#						
28	MU6901	R	MU6901		Peltier ass'y	1	MU6900#				New peltier (Maker) Mizutani	521-0160	1200
28	MU6901	R	MU6901		Peltier ass'y	1	MU6900#				New peltier (Maker) Mizutani	526-0031	1200
29			MU4920		Pump ass'y	1	DH239000		Connector pin	2			
30			MU4920		Pump ass'y	1	DK432500		Housing	1			
31			MU4920		Pump ass'y	1	DM181500		DC pump	1			
32	MU4920	P	MU4920		Pump ass'y	1	MU4920#						
33			MU5451#		M521-DB01								
34			MV1025		520BCNC1A	1							
35	MU5199	P	MV2115		514BTCA1A	1							1100
36			MV2317		514C0067	1							
37			MV2318		514C0068	1							
38	DM173600	P	DM173600		Peltier cooling fan						ORIX MRS16-BUL		0600

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS353800	P	DS353800		Photo interrupter	2					Japan ArefuOL-EE-SH3		
2	DZ235500	P	DZ235500		Barcode reader	1					Olympus SymbolLSK6220-I2B0JG		1100
3			GB6871		Lifelon tube	1							
4			GB7324		Lifelon tube	1							
5			GS4564		C16.7	2							
6			MA0134		Washer	1							
7			MA2561		Name plate	1							
8			MA3225		Lifelon tube	1							
9			MA7590		Joint	1							
10			MB9808		EC label	1							
11			MD1260		C16.7	2							
12			MD1440		CE012	1							
13			MD7274		Pin	2							
14			MD7293		Plug	1							
15			MD7409		Gear-1	1							
16			MD7464		Lifelon tube	1							
17			MD9572		Sensor plate	1							
18			MD9802		T insulator	1							
18			ME8338		T insulator	1						521-0032	0600
19			ME4149		Film	1							
20			ME5132		Sensor plate	2							
21			ME5157		Rotation shaft	1							
22			ME5158		Shaft	1							
23			ME5160		Gear	1							
24			ME5164		ID pillar	1							
25			ME5165		Pillar A	3							
26			ME5166		Pipe	1							
27			ME5167		Packing 1	1							
28			ME5168		Bearing	2							
29			ME5169		Cap	1							
30			ME5170		Pillar C	1							
31			ME5171		Brush plate	1							
32	ME5172	P	ME5172		J brush	1						521-0167	1300
32	ME5172	P	ME5172		J brush	1						526-0039	1300
33			ME5173		Table base	1							
34			ME5174		Bottom table	1							
35			ME5175		ST table	1							
36			ME5176		Pillar C	3							
37			ME5178		Mounting screw	2							
38			ME5182		Sensor base	1							
39			ME5183		Fixing plate	1							
40			ME5185		Ring 1	2							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			ME5187		Sensor base	1							
42			ME5194		Heat insulation	1							
43			ME5736		Spacer	3							
44			ME5744		Thumbscrew	1							
45			ME5746		AD plate	1							
46			ME5749		T insulator	1							
47			ME5911		Heat insulation	1							
48	ME5912	P	ME5912		J brush	1						521-0167	1300
48	ME5912	P	ME5912		J brush	1						526-0039	1300
49			ME5926		Heat insulation	1							
50			ME6662		Hangar	1							
51			ME6663		Base	1							
52			ME6664		Disk	1							
53			ME6665		Sensor plate	1							
54			ME6666		Sensor plate	1							
55			ME6667		ID base	1							
56			ME6668		Cover plate	1							
57			ME6669		Lid	1							
58			ME6670		Cover	1							
59			ME6671		Lid S	1							
60			ME6672		Heat insulation	1							
61			ME6673		Heat insulation	1							
62			ME6674		Heat insulation	1							
63			ME6675		Heat insulation	1							
64			ME6676		Heat insulation	1							
65			ME6677		Heat insulation	1							
66			ME6678		Packing	1							
67			ME6679		Packing	1							
68			ME6680		Packing	1							
69			ME6681		Heat insulation	1							
70			ME6682		Heat insulation	1							
71			ME6683		Heat insulation	1							
72			ME6684		Heat insulation	1							
73			ME6685		Heat insulation	1							
74			ME6686		Heat insulation	1							
75			ME6687		Heat insulation	1							
76			ME6688		plate	1							
77			ME7245		T insulator	1							
78			ME7247		Heat insulation	1							
79			ME7248		Earth plate	1							
80			ME7521		Heat insulation	1							
81			ME7522		Window	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
82			ME7523		Window frame	1							
83			ME7524		H plate	1							
84			ME7525		Heat insulation	1							
85			MU2921		520 sensor ass'y 2	1	DH128900		Connector pin	2			
86			MU2921		520 sensor ass'y 2	1	DK121300		Housing	1			
87			MU2921		520 sensor ass'y 2	1	DY201200			1			
88			MU2921		520 sensor ass'y 2	1	DY201300		Magnet	1			
89	MU2921	P	MU2921		520 sensor ass'y 2	1	MU2921#						
90			MU2991		Heater ass'y 2	2	DH128900		Connector pin	2			
91			MU2991		Heater ass'y 2	2	DK121300		Housing	1			
92			MU2991		Heater ass'y 2	2	DT060200			1			
93			MU2991		Heater ass'y 2	2	DW136400		WIRE AWG22 W				
94			MU2991		Heater ass'y 2	2	MU2991#						
95			MU5943		Thermistor ass'y 2	1	DH128900		Connector pin	3			
96			MU5943		Thermistor ass'y 2	1	DK150000		Housing	1			
97			MU5943		Thermistor ass'y 2	1	DT060800		Thermistor	1			
98	MU5943	P	MU5943		Thermistor ass'y	1	MU5943#					521-0135	0800
99			MU4981		514 sensor ass'y 2	1	DH128900		Connector pin	3			
100			MU4981		514 sensor ass'y 2	1	DK150000		Housing	1			
101			MU4981		514 sensor ass'y 2	1	DS414800		Photo reflector	1			
102	MU4981	P	MU4981		514 sensor ass'y 2	1	MU4981#						
103			MU5348		514 PM unit	1	DH114900		Connector pin	6			
104			MU5348		514 PM unit	1	DH128900		Connector pin	6			
105			MU5348		514 PM unit	1	DK119100		Housing	1			
106			MU5348		514 PM unit	1	DM156100			1			
107			MU5348		514 PM unit	1	DW136400		WIRE AWG22 W				
108	MU5348	P	MU5348		514 PM unit	1	MU5348#						
109			MU5452#	D	M521-DC01							521-0135	1100
110			MV2096		514C0010	2							
111			MV2362		521C0007	1							
112			MV2710		521C0047	1							
113	MU5540	P	MU5540		Window ass'y 1								

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-DD01(MU5453)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DX048900	P	DX048900		SSR	1					OmronG3NA-D210B DC5-24		
2			GB6878		Tube	1							
3			GB7324		Tube	4							
4			GS4564		C 13.1	3							
5			MA2386		Harness holder	1							
6			MA2561		Name plate	1							
7			MA3224		Tube	1							
8			MA7590		Joint	4							
9			MA7665		Tube	1							
10			MA7719		Tube	1							
11			MB0020		T tube	1							
12			MB1973		Cord fixer	2							
13			MB9808		EC label	1							
14			MD1260		C16.7	12							
15			MD1440		CE024	1							
16			MD9799		H insulator	4							
17			MD9803		T insulator	1							
18			MD9804		T insulator	1							
19			MD9856		Stopper	1							
20			ME5749		T insulator	1							
21			ME5750		T insulator	1							
22			ME6648		Base	1							
23			ME6649		PCB plate	1							
24			ME6655		Heat insulation	1							
25			ME6656		Heat insulation	1							
26			ME6657		Heat insulation	1							
27			ME7245		T insulator	1							
28			ME7246		T insulator	4							
29			MU5453#		M521-DD01								
30			MU5462		Peltier ass'y	1	DH029500		Connector pin	4			
31			MU5462		Peltier ass'y	1	DH238700		Connector pin	2			
32			MU5462		Peltier ass'y	1	DH239000		Connector pin	2			
33			MU5462		Peltier ass'y	1	DK432500		Housing	1			
34			MU5462		Peltier ass'y	1	DK497800		176283-1	1			
35			MU5462		Peltier ass'y	1	DW008100		UL1007 AWG18 B				
36			MU5462		Peltier ass'y	1	DW098900		UL1007 AWG18 P				
37			MU5462		Peltier ass'y	1	DW403200		UL1015AWG18 G Y				
38			MU5462		Peltier ass'y	1	DZ219800		Peltier	1			
39			MU5462		Peltier ass'y	1	MB9808		EC label	1			
40			MU5462		Peltier ass'y	1	MD9730		Heat insulation	1			
41			MU5462		Peltier ass'y	1	ME3399		Plate 2	1			
42			MU5462		Peltier ass'y	1	ME6650		Bracket	1			
43			MU5462		Peltier ass'y	1	ME6651		Elbow	2			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
44			MU5462		Peltier ass'y	1	ME6652		Heat insulation	2			
45			MU5462		Peltier ass'y	1	ME6653		Heat insulation	2			
46			MU5462		Peltier ass'y	1	ME6654		Heat insulation	1			
47	MU5536	R	MU5462		Peltier ass'y	1	MU5462#					521-0018	
48			MU5709		DD pump ass'y	1	DH238900		Connector pin	2			
49			MU5709		DD pump ass'y	1	DK432500		Housing	1			
50			MU5709		DD pump ass'y	1	DM193100		Pump	1			
51	MU5537	P	MU5709		DD pump ass'y	1	MU5709#						
52	MU5530	P	MV2355		521BTMC1A	1							
53			MV2571		521C0034	1							
54	DM117500	P	DM117500		Peltier cooling fan						Minebea 5915PC-10T B20-100	521-0071	0600

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-FA01(MU5455)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DO110100		Heat shrink tube						Old DO012500 (Black) -> Transparency	521-0131	0800
2	DS353800	P	DS353800		Photo interrupter	6					Japan ArefuOL-EE-SH3		
3			GB6575		Fixing screw	1							
4			GB7776		T fixer	1							
5			MA2561		Name plate	1							
6			MA3334		Bearing	2							
7	MB5946	P	MB5946		Synapse	1					Takasago SM6-10201 x 2		
8			MB7469		Coupling	1							
9			MB7870		W washer	1							
10			MB9808		EC label	1							
11			MD1852		CH shaft ass'y	1							
12			MD3138		Cord keep	1							
13			MD7118		Frame	1							
14			MD7120		Sensor plate	2							
15			MD7121		Sensor plate	1							
16			MD7122		Plate	1							
17			MD7123		Spline	1							
18			MD7124		Shaft	1							
19			MD7125		Bush	1					ASK:NFEO-8LUU -> THK:LMH8LUU	521-0010	0400
20			MD7128		Thrust BR	2							
21			MD7129		Collar 1						16 +0.2/ +0.1	521-0076	0700
21			ME9654		Collar 1	2					16 +0.027/ +0.016	521-0076	0700
22			MD7134		Bearing S	1							
23			MD7135		Bearing L	1							
24			MD7137		Collar 3	1							
25			MD7138		Flange	1							
26			MD7139		Drymmet	1							
27			MD7140		PCB base	1							
28			MD7143		Block	1							
29			MD7147		Stopper	1							
30			MD7306		PCB base	1							
30			MF0230		PCB base	1							
31			MD7412		Mouthpiece	1							
32			MD7415		Bracket	1							
33	MD9213	P	MD9213		Teflon tube	1					Both side conical shape T1x2x950		
34			ME4832		Spacer	1							
35			ME4836		PCB cover	1							
36			ME5768		Collar 2	1							
37			ME6428		Ceiling plate	1							
38			ME6429		Photo cut	1							
39			ME6430		Arm	1							
40	MU8164	C	ME6431		Teflon tube	1					T1x2x190 Both conical shape		0400
41			ME6432		Disk	1							
42	ME6433	P	ME6433		Belt	1					Three starsBear bag 60S3M246		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			ME6434		Pulley 15	1							
44			ME6435		Pulley 60	1							
45			ME6436		Spacer	1							
46			ME6441		Pulley shaft	1							
47			ME6647		Sensor plate	1							
48			ME7272		Teflon tube	1							
49			ME7760		Sleeve	1							
50			ME7799		Sensor plate	1							
51			ME7800		Sensor flag	1							
52			ME7801		Spring 3	1							
53			ME7816		SP holder	1							
54	ME7817	P	ME7817		Spacer	1							
54	ME8484	P	ME8484		Spacer	1					Mold (ME4832+ME7817)	521-0046	0600
55			ME7819		Cramp table	1							
56			MU2923		520 PM ass'y 6	1	DH128900		Connector pin	6	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
57			MU2923		520 PM ass'y 6	1	DK119100		Housing	1	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
58			MU2923		520 PM ass'y 6	1	DM128800		pulse motor	1	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
59	MU2923	P	MU2923		520 PM ass'y 6	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
60			MU5302		514 PM ass'y	1	DH141500		Connector pin	5			
61			MU5302		514 PM ass'y	1	DK023100		Housing	1			
62			MU5302		514 PM ass'y	1	DZ241200			1			
63			MU5302		514 PM ass'y	1	MU5302#						
64			MU5455#		M521-FA01								
64			MU5455#	B	M521-FA01								
64	MU5501	R	MU5455#	C	M521-FA01							521-0132	1100
65			MV1062		520 C0020	1							
66			MV1075		520 C0033	1							
67			MV2128		514C0025	1							
68	MU5528	P	MV2347		521BPRC1A	1							
69	MU5521	P	MV2351	1.0	521PPR04	1							
70	MU5529	P	MV2354		521BRLS1A	1							
71			MV2572		521C0035	1							
72			MV2573		521C0036	1							
73	MV2713	P	MV2713		Varistor ass'y	1					Old MV2091		
74	MU4396	P	MU4396		Motor driver						Oriental MotorCSD5814NDriver		
75	MU5303	P	MU5303		Motor ass'y						Oriental MotorPK566-NAMotor set		
76	MU6860	P	MU6860		PCB mount set						FA/FD cable failure	521-0132	1100
77	MU6853	P	MU6853		FA cable set						FA/FD cable failure	521-0132	1100

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-FD01(MU5456)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DO110100		Heat shrink tube						Old DO012500 (Black) -> Transparency	521-0131	0800
2	DS353800	P	DS353800		Photo interrupter	5					Japan ArefuOL-EE-SH3		
3			GB6575		Fixing screw	1							
4			MA2561		Name plate	1							
5			MA3334		Bearing	2							
6			MB7469		Coupling	1							
7			MB7870		W washer	1							
8			MB9808		EC label	1							
9			MD1113		T fixer	1							
10			MD1852		CH shaft ass'y	1							
11			MD7118		Frame	1							
12			MD7119		Ceiling plate	1							
13			MD7120		Sensor plate	2							
14			MD7121		Sensor plate	1							
15			MD7122		Plate	1							
16			MD7123		Spline	1							
17			MD7124		Shaft	1							
18			MD7125		Bush	1					ASK:NFEO-8LUU -> THK:LMH8LUU	521-0010	0400
19			MD7126		Photo cut	1							
20			MD7127		Sensor plate	1							
21			MD7128		Thrust BR	2							
22			MD7129		Collar 1						16 +0.2/ +0.1	521-0076	0700
22			ME9654		Collar 1	2					16 +0.027/ +0.016	521-0076	0700
23			MD7134		Bearing S	1							
24			MD7135		Bearing L	1							
25			MD7136		Collar 2	1							
26			MD7137		Collar 3	1							
27			MD7138		Flange	1							
28			MD7139		Drymmet	1							
29			MD7140		PCB base	1							
30			MD7143		Block	1							
31			MD7147		Stopper	1							
32			MD7148		Disk	1							
33			MD7190		Teflon tube	1					T1.5x2.5x90 both conical shape		0400
34	MD7257	P	MD7257		Synapse	1					1.5 x 2.5		
35			MD7306		PCB base	1							
35			MF0230		PCB base	1							
36			MD7413		Mouthpiece	1							
37	MD9214	P	MD9214		Teflon tube	1					One side conical shape T1.5x2.5x950		
38			ME4832		Spacer	1							
39			ME4834		RP holder	1					to ME8278+ME7817	521-0029	0400
39			ME8278		RP holder	1						521-0029	0400
39			ME7817		Spacer	1							
40	ME4839	P	ME4839		Belt	1					Three starsBear bag 60S3M		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			ME4840		Pulley 16	1							
42			ME4841		Pulley 48	1							
43			ME6438		Arm	1							
44			ME6439		PCB cover	1							
45			ME7167		Bracket	1							
46			ME7272		Teflon tube	1							
47			ME7760		Sleeve	1							
48			ME7799		Sensor plate	1							
49			ME7800		Sensor flag	1							
50			ME7801		Spring 3	1							
51			MU2923		520 PM ass'y 6	1	DH128900		Connector pin	6	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
52			MU2923		520 PM ass'y 6	1	DK119100		Housing	1	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
53			MU2923		520 PM ass'y 6	1	DM128800		pulse motor	1	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
54	MU2923	P	MU2923		520 PM ass'y 6	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
55			MU2925		520 PM ass'y	1	DH141500		Connector pin	5			
56			MU2925		520 PM ass'y	1	DK023100		Housing	1			
57			MU2925		520 PM ass'y	1	DZ182400			1			
58			MU2925		520 PM ass'y	1	MU2925#						
59			MU5456#	B	M521-FD01							521-0029	0400
59			MU5456#	C	M521-FD01							521-0029	0400
59	MU5502	R	MU5456#	D	M521-FD01							521-0132	1100
60			MV1062		520 C0020	1							
61			MV1075		520 C0033	1							
62	MU5181	P	MV2076		514BRLS2A	1							
63			MV2089		514C0003	1							
64			MV2092		514C0006	1							
65			MV2128		514C0025	1							
66	MU5365	P	MV2329		514BPRC1A	1							
67	MU5366	P	MV2330	1.0	514PPR12	1							
68	MV2713	P	MV2713		Varistor ass'y	1					Old MV2091		
69	MU4396	P	MU4396		Motor driver						Oriental MotorCSD5814NDriver		
70	MU4397	P	MU4397		Motor ass'y						Oriental MotorPK546-NAMotor set		
71	MU6860	P	MU6860		PCB mount set						FA/FD cable failure	521-0132	1100
72	MU6854	P	MU6854		FD cable set						FA/FD cable failure	521-0132	1100

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-FD11(MU5457)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DO110100		Heat shrink tube						Old DO012500 (Black) -> Transparency	521-0131	0800
2	DS353800	P	DS353800		Photo interrupter	5					Japan ArefuOL-EE-SH3		
3			GB6575		Fixing screw	1							
4			MA2561		Name plate	1							
5			MA3334		Bearing	2							
6			MB7469		Coupling	1							
7			MB7870		W washer	1							
8			MB9808		EC label	1							
9			MD1113		T fixer	1							
10			MD1852		CH shaft ass'y	1							
11			MD7118		Frame	1							
12			MD7119		Ceiling plate	1							
13			MD7120		Sensor plate	2							
14			MD7121		Sensor plate	1							
15			MD7122		Plate	1							
16			MD7123		Spline	1							
17			MD7124		Shaft	1							
18			MD7125		Bush	1					ASK:NFEO-8LUU -> THK:LMH8LUU	521-0010	0400
19			MD7126		Photo cut	1							
20			MD7127		Sensor plate	1							
21			MD7128		Thrust BR	2							
22			MD7129		Collar 1						16 +0.2/ +0.1	521-0076	0700
22			ME9654		Collar 1	2					16 +0.027/ +0.016	521-0076	0700
23			MD7134		Bearing S	1							
24			MD7135		Bearing L	1							
25			MD7136		Collar 2	1							
26			MD7137		Collar 3	1							
27			MD7138		Flange	1							
28			MD7139		Drymmet	1							
29			MD7140		PCB base	1							
30			MD7143		Block	1							
31			MD7147		Stopper	1							
32			MD7149		Disk	1							
33	MU9589	C	MD7190		Teflon tube	1					T1.5x2.5x90 both conical shape		0400
34	MD7257	P	MD7257		Synapse	1					1.5 x 2.5		
35			MD7306		PCB base	1							
36			MD7413		Mouthpiece	1							
37	MD9214	P	MD9214		Teflon tube	1					One side conical shape T1.5x2.5x950		
38			ME4832		Spacer	1							
39			ME4834		RP holder	1					to ME8278+ME7817	521-0029	0400
39			ME8278		RP holder	1						521-0029	0400
39			ME7817		Spacer	1							
40	ME4839	P	ME4839		Belt	1					Three starsBear bag 60S3M		
41			ME4840		Pulley 16	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
42			ME4841		Pulley 48	1							
43			ME6438		Arm	1							
44			ME6439		PCB cover	1							
45			ME7167		Bracket	1							
46			ME7272		Teflon tube	1							
47			ME7760		Sleeve	1							
48			ME7799		Sensor plate	1							
49			ME7800		Sensor flag	1							
50			ME7801		Spring 3	1							
51			MU2923		520 PM ass'y 6	1	DH128900		Connector pin	6	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
52			MU2923		520 PM ass'y 6	1	DK119100		Housing	1	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
53			MU2923		520 PM ass'y 6	1	DM128800		pulse motor	1	Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
54	MU2923	P	MU2923		520 PM ass'y 6	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)	521-0112	0700
55			MU2925		520 PM ass'y	1	DH141500		Connector pin	5			
56			MU2925		520 PM ass'y	1	DK023100		Housing	1			
57			MU2925		520 PM ass'y	1	DZ182400			1			
58			MU2925		520 PM ass'y	1	MU2925#						
59			MU5457#	B	M521-FD11							521-0076	0700
59	MU5503	R	MU5457#	C	M521-FD11							521-0076	0700
59	MU5503	R	MU5457#	D	M521-FD11							521-0132	1100
60			MV1062		520 C0020	1							
61			MV1075		520 C0033	1							
62			MV2089		514C0003	1							
63			MV2092		514C0006	1							
64			MV2128		514C0025	1							
65	MU5365	P	MV2329		514BPRC1A	1							
66	MU5366	P	MV2330	1.0	514PPR12	1							
67	MU5546	P	MV2712		521BRLS2A	1							
68	MV2713	P	MV2713		Varistor ass'y	1					Old MV2091		
69	MU4396	P	MU4396		Motor driver						Oriental MotorCSD5814NDriver		
70	MU4397	P	MU4397		Motor ass'y						Oriental MotorPK546-NAMotor set		
71	MU6860	P	MU6860		PCB mount set						FA/FD cable failure	521-0132	1100
72	MU6854	P	MU6854		FD cable set						FA/FD cable failure	521-0132	1100

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DK117800		Housing	1							
2			DW353500		Cable unit	1							
3			LA6171		1-T	2							
4			LA6172		2-T	2							
5			LA6173		3-T	1							
6			LA6174		Grating	1							
7			LG4192		1-P	1							
8			MA1913		Key	1							
9			MA1914		lamp collar	1							
10			MA1915		lamp fixer	1							
11			MA2561		Name plate	1							
12	ZM0634	C	MA7518		Cuvette	153							0400
13			MB3200		Positioning pin	1							
14			MB7637		Gear shaft	1							
15			MB7644		Bearing	2							
16			MB9808		EC label	1							
17			MD1814		Spacer	1							
18			MD7171		Prop	4							
19			MD7172		Incubation bath 2	1							
20			MD7173		Ring	1							
21			MD7174		Mouthpiece 1	1							
22			MD7177		Pin 1	4							
23			MD7179		Fixer 1	8							
24			MD7180		Pillar	3							
25			MD7181		Blind plate	1							
26			MD7182		Sensor plate 1	1							
27			MD7183		Sensor plate 2	1							
28			MD7184		Sensor plate 3	1							
29			MD7188		Gasket 4	1							
30			MD7189		Fixer 2	1							
31			MD7191		Gear 1	1							
32			MD7192		Fixer 2	8							
33			MD7193		Detection disk	1							
34			MD7194		CU ring 1	1							
35			MD7195		Plate 1	1							
36			MD7196		Plate 2	1							
37			MD7197		CU ring 2	1							
38			MD7198		Pin 2	3							
39			MD7199		CU ring fixer	51							
40			MD7200		Thumbscrew	2							
41			MD7201		Base	1							
42			MD7202		Damper	1							
43			MD7203		M plate	2							
44			MD7204		Gear 2	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
45			MD7205		Gear 3	1							
46			MD7206		Lamp house	1							
47			MD7207		Heat insulation	1							
48			MD7209		Lid	1							
49			MD7210		Mouthpiece 2	2							
50			MD7213		Collar	1							
51			MD7214		Collar 21	1							
52			MD7215		L01 fixer 1	1							
53			MD7216		Nut	2							
54			MD7217		Diaphragm 1	1							
55			MD7218		Block 1	1							
56			MD7219		Collar 22	1							
57			MD7220		L fixer 3	1							
58			MD7221		Diaphragm 2	1							
59			MD7222		Screw	2							
60			MD7223		Fixer 4	1							
61			MD7224		Block 2	1							
62			MD7225		Plate 3	1							
63			MD7226		Cover	1							
64			MD7229		Adiabator 2	2							
65			MD7230		Adiabator 3	2							
66			MD7232		Plate 1	1							
67			MD7233		Plate 2	1							
68			MD7234		Plate 3	1							
69			MD7235		Plate 4	1							
70			MD7236		Plate 5	1							
71			MD7237		Plate 6	2							
72			MD7238		Adiabator 4	2							
73			MD7239		Adiabator 5	1							
74			MD7240		Adiabator 6	1							
75			MD7241		Adiabator 7	1							
76			MD7242		Heat isolation 8	1							
77			MD9325		GR table	1							
78			MD9326		GR base	1							
79			MD9327		gasket	2							
80			ME6699		Incubation bath	1							
81			ME6700		C cover	1							
82			ME6701		Adiabator 1	1							
83			ME6702		Adiabator 4	1							
84			ME6703		Adiabator plate	1							
85			ME7154		Name plate	1							
86			MD7178		Bearing	1					ME7818 -> MD7178	521-0130	0800
87			MU1669		Sensor ass'y	1	DH128900		Connector pin	3			
88			MU1669		Sensor ass'y	1	DO045400		Heat shrink tube				

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
89			MU1669		Sensor ass'y	1	DS244400		Photo interrupter	1			
90			MU1669		Sensor ass'y	1	DW221900		WIRE AWG26 DWB				
91			MU1669		Sensor ass'y	1	DW222900						
92	MU1669	P	MU1669		Sensor ass'y	1	MU1669#						
93			MU1711		Thermistor 2	1	DH128900		Connector pin	3			
94			MU1711		Thermistor 2	1	DK150000		Housing	1			
95			MU1711		Thermistor 2	1	DO045300			1			
96			MU1711		Thermistor 2	1	DO045400		Heat shrink tube				
97			MU1711		Thermistor 2	1	DT037100		Thermistor	1			
98	MU1711	P	MU1711		Thermistor 2	1	MU1711#						
99			MU2926		520 PM ass'y 9	1	DH128900		Connector pin	6			
100			MU2926		520 PM ass'y 9	1	DK119100		Housing	1			
101			MU2926		520 PM ass'y 9	1	DM156800			1			
102	MU2926	P	MU2926		520 PM ass'y 9	1	MU2926#						
103			MU2927		520 sensor ass'y 3	1	DH128900		Connector pin	3			
104			MU2927		520 sensor ass'y 3	1	DO001900		Heat shrink tube				
105			MU2927		520 sensor ass'y 3	1	DS117500		Photo interrupter	1			
106			MU2927		520 sensor ass'y 3	1	DW171000						
107			MU2927		520 sensor ass'y 3	1	DW221900		WIRE AWG26 DWB				
108	MU2927	P	MU2927		520 sensor ass'y 3	1	MU2927#						
109			MU5458#		M521-GA01								
110	MU3614	P	MV1006		520 BPPHD1A	1							
111			MV2024		520C0081	1							
112	MU3614	P	MU3614		Photodiode array ass'y						MV1006+Frame		1100
113	MU5534	R	MU5533		Incubation Bath		MU5533		Incubation Bath		Incubation bath + grating	521-0040	0700
114	MU6310	P	MU3622		Cu ring ass'y		MU3622#				MD7194+MD7195+MD7196+MD7197+MD7198 +MD7199 MU9608 (C) -> MU6310 (P)	521-0073	0700

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DK117800		Housing	1							
2			DW353500		Cable unit	1							
3			LA6171		1-T	2							
4			LA6172		2-T	2							
5			LA6173		3-T	1							
6			LA6174		Grating	1							
7			LG4192		1-P	1							
8			MA1913		Key	1							
9			MA1914		Lamp collar	1							
10			MA1915		Lamp fixer	1							
11			MA2561		Name plate	1							
11	MU4138	P	ME1237		Name plate	1							
12	ZM0634	C	MA7518		Cuvette	153							0400
13			MB3200		Positioning pin	1							
14			MB7637		Gear shaft	1							
15			MB7644		Bearing	2							
16			MB9808		EC label	1							
17			MD1814		Spacer	1							
18			MD7171		Prop	4							
19			MD7172		Incubation bath 2	1							
20			MD7173		Ring	1							
21			MD7174		Mouthpiece 1	1							
22	MU4138	P	MD7177		Pin 1	21							
23			MD7179		Fixer 1	8							
24			MD7180		Pillar	3							
25	MU4138	P	ME0126		Blind plate	1							
26			MD7182		Sensor plate 1	1							
27			MD7183		Sensor plate 2	1							
28			MD7184		Sensor plate 3	1							
29			MD7188		Gasket 4	1							
30			MD7189		Fixer 2	1							
31			ME0127		Gear 11	1							
32			MD7192		Fixer 3	8							
33			MD7193		D parts	1							
34	MU4138	P	ME0128		Cuvette ring 11	1							
35	MU4138	P	MD7195		Plate 1	1							
36	MU4138	P	MD7196		Plate 2	1							
37	MU4138	P	ME0129		Cuvette ring 21	1							
38	MU4138	P	MD7198		Pin 2	3							
39	MU4138	P	ME0134		Cuvette fixer	17							
40			MD7200		Knob	2							
41			MD7201		Base	1							
42			MD7202		Damper	1							
43			MD7203		M plate	2							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
44			MD7204		Gear 2	1							
45			MD7205		Gear 3	1							
46			MD7206		Lamp house	1							
47			MD7207		Heat insulation	1							
48			MD7209		Lid	1							
49			MD7210		Mouthpiece 2	2							
50			MD7213		Collar	1							
51			MD7214		Collar 21	1							
52			MD7215		L01 fixer 1	1							
53			MD7216		Nut	2							
54			MD7217		Diaphragm 1	1							
55			MD7218		Block 1	1							
56			MD7219		Collar 22	1							
57			MD7220		L fixer 3	1							
58			MD7221		Diaphragm 2	1							
59			MD7222		Screw	2							
60			MD7223		Fixer 4	1							
61			MD7224		Block 2	1							
62			MD7225		Plate 3	1							
63			MD7226		Cover	1							
64			MD7229		Adiabator 2	2							
65			MD7230		Adiabator 3	2							
66			MD7232		Plate 1	1							
67			MD7233		Plate 2	1							
68			MD7234		Plate 3	1							
69			MD7235		Plate 4	1							
70			MD7236		Plate 5	1							
71			MD7237		Plate 6	2							
72			MD7238		Adiabator 4	2							
73			MD7239		Adiabator 5	1							
74			MD7240		Adiabator 6	1							
75			MD7241		Adiabator 7	1							
76			MD7242		Adiabator 8	1							
77			MD9325		GR table	1							
78			MD9326		GR base	1							
79			MD9327		Gasket	2							
80			ME6699		Incubation bath	1							
81			ME6700		C cover	1							
82			ME6701		Adiabator 1	1							
83			ME6702		Adiabator 4	1							
84			ME6703		Adiabator	1							
85			ME7154		Name plate	1							
86			MD7178		Bearing	1					ME7818 -> MD7178	521-0130	0800
87			MU1669		Sensor ass'y	1	DH128900		Connector pin	3			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
88			MU1669		Sensor ass'y	1	DO045400		Heat shrink tube				
89			MU1669		Sensor ass'y	1	DS244400		Photo interrupter	1			
90			MU1669		Sensor ass'y	1	DW221900		WIRE AWG26 DWB				
91			MU1669		Sensor ass'y	1	DW222900		UL1007 AWG26 D				
92	MU1669	P	MU1669		Sensor ass'y	1	MU1669#						
93			MU1711		Thermistor 2	1	DH128900		Connector pin	3			
94			MU1711		Thermistor 2	1	DK150000		Housing	1			
95			MU1711		Thermistor 2	1	DO045300		Tube	1			
96			MU1711		Thermistor 2	1	DO045400		Heat shrink tube				
97			MU1711		Thermistor 2	1	DT037100		Thermistor	1			
98	MU1711	P	MU1711		Thermistor 2	1	MU1711#						
99			MU2926		520 PM ass'y 9	1	DH128900		Connector pin	6			
100			MU2926		520 PM ass'y 9	1	DK119100		Housing	1			
101			MU2926		520 PM ass'y 9	1	DM156800		Pulse motor	1			
102	MU2926	P	MU2926		520 PM ass'y 9	1	MU2926#						
103			MU2927		520 sensor ass'y 3	1	DH128900		Connector pin	3			
104			MU2927		520 sensor ass'y 3	1	DO001900		Heat shrink tube				
105			MU2927		520 sensor ass'y 3	1	DS117500		Photo interrupter	1			
106			MU2927		520 sensor ass'y 3	1	DW171000		UL1007 AWG26 B				
107			MU2927		520 sensor ass'y 3	1	DW221900		WIRE AWG26 DWB				
108	MU2927	P	MU2927		520 sensor ass'y 3	1	MU2927#						
109			MU5459#		M521-GA11								
110	MU3614	P	MV1006		520BPHD1A	1							1100
111			MV2024		520C0081	1							
112	MU3614	P	MU3613		Photo detector ass'y		MU3613#				MD7224+ MD7225+ MV1006		1100
113	MU6174	R	MU6173		Incubation Bath		MU6173		Incubation Bath		Incubation bath + grating	521-0040	0700
114	MU9608	C	MU3622		Cuv ring ass'y		MU3622#				MD7194+MD7195+MD7196+MD7197+MD7198 +MD7199 MU9608 (C) -> MU6310 (P)	521-0073	0700
121	MU4138	P	ME0131		Knob C	17							
122	MU4138	P	ME1401		Cuvette holder	17							
123	MU4138	P	ME1402		CU receptacle A	17							
124	MU4138	P	ME1403		CU receptacle B	51							
125	MU4138	P	MU4138#		Cuvette ring ass'y								
126	MU4139	P	MU4139#		Cuvette holder ass'y						ME1401, ME1402, ME1403, ME0131, ME0134		

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-JD01(MU5467)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	ZM0084	C	DB007900		Fuse	1					250V,2A		
2			DB087800		Breaker	1					250V,15A SER-F1-62F-15A		
3			DB091600		Breaker	1					250V,3A SER-F1-62F-20A		
4			DB095200		Breaker	1					250V,3A SER-F1-62F-7.5A		
5			DF015500		Filter	1					250V,10A ZAC2210-11		
6			DH012700		Terminal	4							
7			DH021700		Terminal	2							
8			DH029500		Terminal	2							
9			DH030000		Terminal	4							
10			DH030200		Terminal	12							
11			DH030800		Terminal	13							
12			DH119200		Terminal	9							
13			DH128900		Terminal	4							
14			DH130700		Terminal	5							
15			DH181000		Terminal	4							
16			DH275300		Terminal table	1							
16			DH314700		Terminal table	1					Morimatsu FTS3-12PC-CSA		0600
17			DH275400		Short bar	2							
18			DH286200		Holder	1						520-0060	
19			DH286300		Holder	1						520-0060	
20			DK119100		Housing	1							
21			DK327500		Housing	1							
22			DK609400		Power supply connector	1							
23			DO002000		Protection tube						3X0.25		
24			DO002200		Protection tube						4X0.25		
25			DO007000		Sleeve	4							
26			DO007100		Sleeve	2							
27			DO039700		Collar	4					NA-405		
28			DO040500		Collar	4					NB-400		
29			DQ023800		LED	1					SDB-505AGD		
30			DS392900		Varistor	5					ERZ-C10DK221		
31			DW014900		Wire AWG14 W								
32			DW015100		Wire AWG14 H								
33			DW015900		Wire AWG18 W								
34			DW016100		Wire AWG18 H								
35			DW095200		Wire AWG22 B								
36			DW102700		Wire AWG22 H								
37			DW136400		Wire AWG22 W								
38			DW177700		Wire AWG18 Y/G								
39	DX054500	P	DX054500		Relay	2					BMF61041N	520-0304	0600
40			MA2455		Grommet	1							
41			MB1973		Cord fixer	4							
42			MB9132		EC label	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			MB9807		Model label	1							
44			MD1449		Adapter	2							
45			ME6552		Plate R	1						520-0060	
46			ME6553		Socket plate	1							
47			MU5467#		M520-JD01	1							
48	ZM1514	P	UDCD31A	B	PCB	1						520-0055	1100

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-JD11(MU5468)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	ZM0084	C	DB007900		Fuse	1					250V,2A		
2			DB087800		Breaker	1					250V,15A SER-F1-62F-15A		
3			DB091600		Breaker	1					250V,3A SER-F1-62F-20A		
4			DB095200		Breaker	1					250V,3A SER-F1-62F-7.5A		
5			DF015500		Filter	1					250V,10A ZAC2210-11		
6			DH012700		Terminal	4							
7			DH021700		Terminal	2							
8			DH029500		Terminal	2							
9			DH030000		Terminal	4							
10			DH030200		Terminal	12							
11			DH030800		Terminal	13							
12			DH119200		Terminal	9							
13			DH128900		Terminal	4							
14			DH130700		Terminal	5							
15			DH181000		Terminal	4							
16			DH275300		Terminal table	1							
16			DH314700		Terminal table	1					Morimatsu FTS3-12PC-CSA		0600
17			DH275400		Short circuit bar	2							
18			DH286200		Holder	1						520-0060	
19			DH286300		Holder	1						520-0060	
20			DK119100		Housing	1							
21			DK246300		Connector cover	3					DDK JMRC13		
22			DK327500		Housing	1							
23			DK609400		Power supply connector	1							
24			DO002000		Heat shrink tube						3X0.25		
25			DO002200		Heat shrink tube						4X0.25		
26			DO007000		Sleeve	4							
27			DO007100		Sleeve	2							
28			DO039700		Collar	4					NA-405		
29			DO040500		Collar	4					NB-400		
30			DQ023800		LED	1					SDB-505AGD		
31			DS392900		Varistor	5					ERZ-C10DK221		
32			DW014900		Wire AWG14 W								
33			DW015100		Wire AWG14 H								
34			DW015900		Wire AWG18 W								
35			DW016100		Wire AWG18 H								
36			DW095200		Wire AWG22 B								
37			DW102700		Wire AWG22 H								
38			DW136400		Wire AWG22 W								
39			DW177700		Wire AWG18 Y/G								
40	DX054500	P	DX054500		Relay	2					BMF61041N	520-0304	0600

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			MA2455		Grommet	1							
42			MB1973		Cord fixer	4							
43			MB9132		EC label	1							
44			MB9807		Model label	1							
45			MD1449		Adapter	4							
46			ME1387		Fixing plate	1							
47			ME6552		Rear plate R	1						520-0060	
48			ME6554		Socket plate	1							
49			MU5468#		M520-JD01	1							
50			UDCD31A	B	PCB	1						520-0055	1100
51			DW417400		Wire	1					For JD Noise	521-0157	1200
51			DW417400		Wire	1					For JD Noise	526-0022	1200
52			DH119100		Terminal	1					For JD Noise	521-0157	1200
52			DH119100		Terminal	1					For JD Noise	526-0022	1200
53			DH030800		Terminal	1					For JD Noise	521-0157	1200
53			DH030800		Terminal	1					For JD Noise	526-0022	1200

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-JD21(MU5469)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB087800		Breaker	1					250V,15A SER-F1-62F-15A		
2			DB091600		Breaker	1					250V,3A SER-F1-62F-20A		
3			DB091800		Fuse	1					250V,2A 217002		
4			DB095200		Breaker	1					250V,3A SER-F1-62F-7.5A		
5			DF015500		Filter	1					250V,10A ZAC2210-11		
6			DH012700		Terminal	4							
7			DH021700		Terminal	2							
8			DH029500		Terminal	2							
9			DH030000		Terminal	4							
10			DH030200		Terminal	12							
11			DH030800		Terminal	11							
12			DH119100		Terminal	2							
13			DH119200		Terminal	9							
14			DH128900		Terminal	4							
15			DH130700		Terminal	5							
16			DH181000		Terminal	4							
17			DH275300		Terminal table	1							
17			DH314700		Terminal table	1					Morimatsu FTS3-12PC-CSA		0600
18			DH275400		Short circuit bar	2							
19			DH286200		Holder	1						520-0060	
20			DH286300		Holder	1						520-0060	
21			DH286400		Holder	1					10A, 250V 3455LF1-020		
22			DK119100		Housing	1							
23			DK246300		Connector cover	3					DDK JMRC13		
24			DK327500		Housing	1							
25			DK696300		Power supply connector	1					16A LEGRAND 741 30		
26			DK696400		Bracket	1					LEGRAND 748 52		
27			DO002000		Heat shrink tube						3X0.25		
28			DO002200		Heat shrink tube						4X0.25		
29			DO007000		Sleeve	4							
30			DO007100		Sleeve	2							
31			DO039700		Collar	4					NA-405		
32			DO040500		Collar	4					NB-400		
33			DQ023800		LED	1					SDB-505AGD		
34			DS368300		C varistor	1					0.1W,0390V ERZ-V05D391		
35			DS392900		Varistor	5					ERZ-C10DK221		
36			DW014900		Wire AWG14 W								
37			DW015100		Wire AWG14 H								
38			DW015900		Wire AWG18 W								
39			DW016100		Wire AWG18 H								
40			DW095200		Wire AWG22 B								
41			DW102700		Wire AWG22 H								
42			DW136400		Wire AWG22 W								

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			DW177700		Wire AWG18 Y/G								
44	DX054500	P	DX054500		Relay	2					BMF61041N	520-0304	0600
45			DZ119100		Filter	1					TDK ZCAT2032-0930		
46			MA2455		Grommet	1							
47			MB1973		Cord fixer	4							
48			MB9132		EC label	1							
49			MB9807		Model label	1							
50			MD1449		Adapter	4							
51			ME1387		Fixing plate	1							
52			ME6552		Rear plate R	1						520-0060	
53			ME6555		Socket plate	1							
54			MU5469#		M520-JD01	1							
55	ZM1514	P	UDCD31A	B	PCB	1						520-0055	1100

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-JD31(MU5470)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	ZM0084	C	DB007900		Fuse	1					250V,2A		
2			DB087800		Breaker	1					250V,15A SER-F1-62F-15A		
3			DB091600		Breaker	1					250V,3A SER-F1-62F-20A		
4			DB095200		Breaker	1					250V,3A SER-F1-62F-7.5A		
5			DF015500		Filter	1					250V,10A ZAC2210-11		
6			DH012700		Terminal	4							
7			DH021700		Terminal	2							
8			DH029500		Terminal	2							
9			DH030000		Terminal	4							
10			DH030200		Terminal	12							
11			DH030800		Terminal	11							
12			DH119200		Terminal	9							
13			DH128900		Terminal	4							
14			DH130700		Terminal	5							
15			DH181000		Terminal	4							
16			DH275300		Terminal table	1							
16			DH314700		Terminal table	1					Morimatsu FTS3-12PC-CSA		0600
17			DH275400		Short circuit bar	2							
18			DH286200		Holder	1						520-0060	
19			DH286300		Holder	1						520-0060	
20			DK119100		Housing	1							
21			DK327500		Housing	1							
22			DK696400		Bracket	1					LEGRAND 748 52		
23			DK711900		Power supply connector	1					10A LEGRAND 741 67		
24			DO002000		Heat shrink tube						3X0.25		
25			DO002200		Heat shrink tube						4X0.25		
26			DO007000		Sleeve	4							
27			DO007100		Sleeve	2							
28			DO039700		Collar	4					NA-405		
29			DO040500		Collar	4					NB-400		
30			DQ023800		LED	1					SDB-505AGD		
31			DS368300		C varistor	1					0.1W,0390V ERZ-V05D391		
32			DS392900		Varistor	5					ERZ-C10DK221		
33			DW014900		Wire AWG14 W								
34			DW015100		Wire AWG14 H								
35			DW015900		Wire AWG18 W								
36			DW016100		Wire AWG18 H								
37			DW095200		Wire AWG22 B								
38			DW102700		Wire AWG22 H								
39			DW136400		Wire AWG22 W								
40			DW177700		Wire AWG18 Y/G								
41	DX054500	P	DX054500		Relay	2					BMF61041N	520-0304	0600
42			MA2455		Grommet	1							

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			MB1973		Cord fixer	4							
44			MB9132		EC label	1							
45			MB9807		Model label	1							
46			MD1449		Adapter	4							
47			ME6552		Rear plate R	1						520-0060	
48			ME6556		Socket plate	1							
49			MU5470#		M520-JD01	1							
50	ZM1514	P	UDCD31A	B	PCB	1						520-0055	1100

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-JD41(MU5471)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	ZM0084	C	DB007900		Fuse	1					250V,2A		
2			DB087800		Breaker	1					250V,15A SER-F1-62F-15A		
3			DB091600		Breaker	1					250V,3A SER-F1-62F-20A		
4			DB095200		Breaker	1					250V,3A SER-F1-62F-7.5A		
5			DF015500		Filter	1					250V,10A ZAC2210-11		
6			DH012700		Terminal	4							
7			DH021700		Terminal	2							
8			DH029500		Terminal	2							
9			DH030000		Terminal	4							
10			DH030200		Terminal	12							
11			DH030800		Terminal	11							
12			DH119100		Terminal	2							
13			DH119200		Terminal	9							
14			DH128900		Terminal	4							
15			DH130700		Terminal	5							
16			DH181000		Terminal	4							
17			DH275300		Terminal table	1							
17			DH314700		Terminal table	1					Morimatsu FTS3-12PC-CSA		0600
18			DH275400		Short circuit bar	2							
19			DH286200		Holder	1						520-0060	
20			DH286300		Holder	1						520-0060	
21			DK119100		Housing	1							
22			DK327500		Housing	1							
23			DK696300		Power supply connector	1					16A LEGRAND 741 30		
24			DK696400		Bracket	1					LEGRAND 748 52		
25			DO002000		Heat shrink tube						3X0.25		
26			DO002200		Heat shrink tube						4X0.25		
27			DO007000		Sleeve	4							
28			DO007100		Sleeve	2							
29			DO039700		Collar	4					NA-405		
30			DO040500		Collar	4					NB-400		
31			DQ023800		LED	1					SDB-505AGD		
32			DS368300		C varistor	1					0.1W,0390V ERZ-V05D391		
33			DS392900		Varistor	5					ERZ-C10DK221		
34			DW014900		Wire AWG14 W								
35			DW015100		Wire AWG14 H								
36			DW015900		Wire AWG18 W								
37			DW016100		Wire AWG18 H								
38			DW095200		Wire AWG22 B								
39			DW102700		Wire AWG22 H								
40			DW136400		Wire AWG22 W								
41			DW177700		Wire AWG18 Y/G								
42	DX054500	P	DX054500		Relay	2					BMF61041N	520-0304	0600

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			DZ119100		Filter	1					TDK ZCAT2032-0930		
44			MA2455		Grommet	1							
45			MB1973		Cord fixer	4							
46			MB9132		EC label	1							
47			MB9807		Model label	1							
48			MD1449		Adapter	4							
49			ME6552		Rear plate R	1						520-0060	
50			ME6557		Socket plate	1							
51			MU5471#		M520-JD01	1							
52	ZM1514	P	UDCD31A	B	PCB	1						520-0055	1100

■ Explanation of drawing

IPB No. (IPB#)

The attached numbers for each part in Fig. 1 are called “IPB No.(IPB#)”.
Single part (e.g. 26, 27and 28 in the Fig.1)
Assemble part
Some cases, assemble part is enclosed by broken line. (e.g. 66 in Fig.1)
Other cases are like single parts.

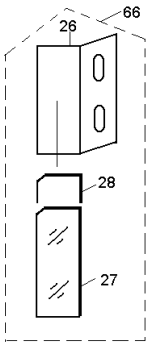


Fig. 1

Label

MODEL: Model name
HOUSE CODE or UNIT: Unit name
FIG: Page No. (Page/ Total page)
xxxx: Revision

■ Explanation of parts list

Header

ILLUSTRATED PARTS BREAKDOWN: Page title
AU640 (M521): Model name(R&D No.)
M521-AA01 (MU5444): Unit name (Unit parts No.)
Rev.: Revision
Page: (Page/ Total page)

Table

No.: IPB No. (IPB#)
Some IPB Numbers are not existing on the drawing. Most cases are EL parts.
Order_No.: Order number
The parts that are mentioned in this column are registered into parts master for order processing as regular parts.
The regular parts are controlled by Olympus warehouse.
Reg: Regular parts category
C: Consumable part, P: Service part, R: Rotation part (Repairable part)
Parts_No.1: Parts number 1 (Single part or Assemble part)
In case the order number column is not filled out, you can order with this part number. “# Mark ” indicates assemble part No.
Rev1: Revision of Parts_No.1 (“ Space” or “A” means Revision A. “B” and after are filled out.)
Parts _Name1: Description of Parts_No.1.
Qty1: Quantity of Parts_No.1.
Quantity that is used in the unit (Not Quantity of the delivery set)
Parts_No.2: Parts number 1 (Single part)
Normally, breakdown of assemble part are mentioned. “# Mark ” indicates assemble part No.
Rev2: Revision of Parts_No.1 (“Space” or “A” means Revision A. “B” and after are filled out.)
Parts _Name2: Description of Parts_No.1.
Qty2: Quantity of Parts_No.1.
Quantity that is used in the assemble part
Remarks: Maker, type and some other notes are mentioned.
ECN: Concerned ECN number.
Rev: Updated revision of the part.

Footer

g521kipb: File name of Data base

■ How to use IPB

Find order No.

1. Find targets on the drawing of the unit and note the IPB No.
2. Jump to IPB No. in the parts list for the target parts.
3. Have notes of Order_No and Rev1 (latest revision) for the target parts.

(e.g.)

No	Order_No	Reg	Parts_No1	Rev 1	Parts_Name 1	Qty 1	Parts_No2	Rev 2		ECN	Rev
51			MU2923		520 ass'y 6	1	DH128900				
52			MU2923		520 ass'y 6	1	DK119100				
53			MU2923		520 ass'y 6	1	DM128800				
54			MU2923	A	520 ass'y 6	1	MU2923#				
54	MU2923	P	MU2923	B	520 ass'y 6	1	MU2923#			520-0500	0900
60			MV1062		520C0020	1					

Order 520ass'y 6 with " MU2923B". Do not order IPB No. 51, 52, 53 and 54.
MV1062 is not regular part so the Order_No column is not filled out. But, you can order it with "MV1062".

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M521-OPG01(MU5465)

IPB#	Order_No	Cag.	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			GB9341		Edging	1					Modified Kitagawa Kogyo CE-012(95mm)		0700
2			MA2386		Herness binder	2					Kitagawa Kogyo LPMS-S8		0700
3			MB8477		Cramp	1					Kitagawa Kogyo K-106G		0700
4			ME2265		Name plate	1					Inhibit for Rack set if Lamp is ON		0700
5			ME8960		Cover F	1					Modified ME6347		0700
6			ME8961		CA cover	1					Similar with ME6520		0700
7			ME8962		C cover R	1					Similar with MD7575		0700
8			ME8963		Cover holder	1					Similar with ME6549		0700
9			ME8964		Sensor plate	2							0700
10			~~ME8965~~		~~Plate~~	~~1~~					Eliminated	521-0172	1300
12			MD0509		Label	2							0700
13			~~ME8853~~		~~Spacer~~	~~1~~					Eliminated	521-0172	1300
14			~~ME8854~~		~~Box~~	~~1~~					Eliminated	521-0172	1300
14			MZ0206		CM Box	1					With Spacer	521-0172	1300
15			MV2883		521C0055	1					Cable old MV3261(521C0058)	521-0172	1300
16			DS378800		Sensor1	1					Photo sensor Thanks PM2-LL11B		0700
17			DS416100		Sensor2	4					Photo sensor Nihon alef OH-101202-701	521-0172	1300
20			MF2290		Cover holder	1						521-0172	1300
21			MF2291		Sensor plate 2	1						521-0172	1300
22			MF2292		Push plate	1						521-0172	1300
23			MF2293		Rack base	1						521-0172	1300
24			MF2294		Rack guide	1						521-0172	1300
25			MF2295		Sensor cover	1						521-0172	1300

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DK601900		Fiber connector					AA	2-174134-5 (25) Photo		
2			DK602000		Fiber connector					AA	3-174134-2 (32) Detect		
3			DK805000		Fiber connector					AA	3-174134-3 (33) Detect	521-0092	0700
4			DK805100		Fiber connector					AA	2-174134-6 (26) Photo	521-0092	0700
5	DM187100	P	DM187100		Fan					AA	Minebea 4715PS-10TB20-B00		
6	DP067900	P	DP067900		Converter					AA	(PS1) Nemic lambda LWT30H-5FF		1200
7	DP070900	P	DP070900		Converter					AA	(PS2) Nemic lambda LWT15H-5FF		1200
8	DP076200	R	DP076200		Converter					AA	(PS5) OLY-40UC		1100
9	DP077600	P	DP077600		Converter					AA	(PS3, 4) EWS600P-24 for M521		
10	DP084800	P	DP084800		Converter	2				AA	(PS3, 4) JWS600-24 for M526		1200
11	DQ057700	P	DQ057700		LED(Green)					AA	Nikkai AT-620-M DY2037+DY2071+MD9977		
12	DZ235400	P	DZ235400		Bar code reader					AA	Olympus symbol LSK6220-I1B0JG For rack ID		1100
13	MB9963	P	MB9963		Braid hose					AA	Braid hose 12x18x10m SD0005		
14	MD2023	P	MD2023		Diaphragm					AA			
15	MD2025	P	MD2025		Valve					AA	For Vacuum pump		
16	MD6996	P	MD6996		Tube					AA	Poalon tube 5x9x10m SD0017		
17	MD6998	P	MD6998		Tube					AA	Poalon tube 2.5x4.5x10m SD0016		
18	MD9210	P	MD9210		Orifice 3					AA	2 (5)		
19	MD9996	P	MD9996		Tube					AA	Straight T2x3x1300		
20	MU3537	P	MU3537		M520-EF01					AA			
21			MU3596	D	Photometer Cont. PCB		MV1005		520BPHC1A	AA			
22	MU3596	R	MU3596	G	Photometer Cont. PCB		MV1005		520BPHC1A	AA		521-0003	
23	MU3597	P	MU3597		Reagent tray cont. PCB		MV1013		520BRFC1A	AA			1100
24	MU3598	R	MU3598		Mix cont. PCB		MV1014		520BMXC1A	AA			
25			MU3602	E	ANL Main PCB		MV1019		520BANL1A	AA			
26	MU3602	R	MU3602	F	ANL Main PCB		MV1019		520BANL1A	AA		521-0030	
27	MU3606	P	MU3606		DC driver PCB		MV1024		520BADR1A	AA			1100
28	MU3607	P	MU3607		DC Valve PCB		MV1025		520BCNC1A	AA			
29	MU3608	P	MU3608		Optical com cable		MV1051		520C0009	AA			
30	MU3645	P	MU3645		STAT Sw ass'y					AA	Nikkai YB-15WRKS1		
31	MU3646	P	MU3646		STAT ROT SW ass'y					AA	Nikkai YB-15WRKS1 DY2069+DY2070+DQ0577+MD9976		
32	MU4659	P	MU4659		Dilution temp. cont. PCB		MV1950		520BTMC7A	AA			1100
33	MU4660	P	MU4660		Wash water temp. cont PCB		MV1951			AA		521-0120	0800
34	MU4731	P	MU4731		GA temp. cont. PCB		MV1986		520BTMCAA	AA			1100

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
35	MU5000	P	MU5000							AA		521-0089	0700
36	MU5190	P	MU5190	1.0	514PPR01		MV2078		514PPR01	AA			
37	MU5195	P	MU5195		V53 CPU PCB		MV2074		514BCPU1A	AA			1100
38	MU5352	P	MU5352		Sample clog detection PCB		MV2067		514BNCS1A	AA			
39	MU5354	P	MU5354		ANL IPL PROM		MV2181		514PPR10	AA			
40	MU5358	P	MU5358		Valve ass'y					AA	Takasago MTV-2R-NM6G IN with 1 x ME5090	521-0089	0700
41	MU5359	P	MU5359		Valve ass'y					AA	Takasago MTV-2R-NM6G IN with2 x ME5090	521-0089	0700
42	MU6197	P	MU6197		Pressure sensor #					AA	#9100250 and after	521-0052	0600
43			MU6827		Retro fit					AA	Retro fit (M521-OPR01)	521-0140	1100
44	MU6830	P	MU6830		Harness fix #					AA	FA/FD cable failure	521-0132	1100
45	MU6910	P	MU6910		Valve ass'y 1		MU6910#			AA	Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	521-0164	1200
46	MU6910	P	MU6910		Valve ass'y 1		MU6910#			AA	Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	526-0035	1200
47	MU6913	P	MU6913		Valve ass'y 2		MU6913#			AA	Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	521-0164	1200
48	MU6913	P	MU6913		Valve ass'y 2		MU6913#			AA	Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	526-0035	1200
49	MU6914	P	MU6914		Valve ass'y 3		MU6914#			AA	Takasago MTV-2R-NM6G-11 IN with2 x ME5090	521-0164	1200
50	MU6914	P	MU6914		Valve ass'y 3		MU6914#			AA	Takasago MTV-2R-NM6G-11 IN with2 x ME5090	526-0035	1200
51			MV1019	G	520BANL1A	1				AA	(10G) for Noise add condenser	521-0159	1200
52			MV1019	G	520BANL1A	1				AA	(10G) for Noise add condenser	526-0026	1200
53	MU3602	R	MV1019	G	520BANL1A	1				AA	(11G) Correct Artwork	521-0161	1200
54	MU3602	R	MV1019	G	520BANL1A	1				AA	(11G) Correct Artwork	526-0032	1200
55	MU3589	P	MV1030	3.0	520PPR03		MV1030		520PPR03	AA			
56	MU5525	P	MV2344		Rack/ STAT cont. PCB		MV2344		521BRSC1A	AA			1100
57	MU5526	P	MV2345		Automatic repeat run cont. PCB		MV2345		521BRBC1A	AA			1100
58	MU5527	P	MV2346		Dispenser cont. PCB		MV2346		521BDSC1A	AA			1100
59	MU5518	P	MV2348	1.1	Rack cont. PROM		MV2348		521PPR01	AA			
60	MU5519	P	MV2349	1.0	Automatic repeat run cont. PROM		MV2349		521PPR02	AA			
61	MU5520	P	MV2350	1.0	Dispenser cont. PROM		MV2350		521PPR03	AA			

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
62	MU5522	P	MV2352	1.0	Reagent compartment cont. PROM		MV2352		521PPR05	AA			
63	MU5523	P	MV2353	1.0	Mix cont. PROM		MV2353		521PPR06	AA			
64	MU5524	P	MV2611	1.0	ISE I/F PROM		MV2611		521PPR07	AA			
65	MU5242	P	UDCD42A		LED PCB					AA		521-0033	
66	ZM1976	P	ZM1976		Tube		MB5668		Tube	AA	Lifelon 12x18x10m		
67	MV1764	P	MV1764		Communication cable					ACC	Sanwa supply		
68	MU5014	P	MU5014		514 PM ass'y 2					CA	Oriental PK268-02A		
69	MU5496	R	MU5496	C	M521-CA01		MU5445		M521-CA01	CA	Olympus	521-0067	0600
70	MV0840	P	MV0840		Rack SW					CA			
71	MF0227	P	MF0227		Bush	130				CA		521-0169	1200
72	MF0226	P	MF0226		Feed plate	65				CA		521-0169	1200
73	DZ235500	P	DZ235500		Bar code reader					CB	Olympus Symbol LSK6220-I2B0JG		1100
74	MB9348	P	MB9348		Belt					CB			
75	MU5037	P	MU5037		Mirror ass'y		ME5734		Mirror	CB			
76	MU5497	R	MU5497	C	M521-CB01		MU5446		M521-CB01	CB	Add MV3002 FG on Bruch	521-0079	0700
77	MU5498	R	MU5498	E	M521-CC01		MU5447		M521-CC01	CC	Olympus	521-0044	0600
78	MU5946	P	MU5946							CC	ECN521-017		
79	MU6179	P	MU6179		Shaft ass'y					CC	#219 and after	521-0044	0600
80	MU5499	P	MU5499		M521-CD01		MU5448		M521-CD01	CD			
81	MU5500	P	MU5500		M521-CE01		MU5449		M521-CE01	CE	Olympus		
82	MU2911	P	MU2911	B	520 PM ass'y 3					CG	Japan pulse motor PFC42T-48B1		
83	MU5513	P	MU5513		M521-CG01		MU5511		M521-CG01	CG			
84	MU5514	P	MU5514		M521-CG02		MU5512		M521-CG02	CG			
85	DZ195300	R	DZ195300		Bar code reader					DA	Olympus 'LSK6220-A		
86	MU6424	R	MU5460#	E	M521-DA01					DA	REP, Bearling	521-0135	1100
87	MU6425	R	MU5461#	D	M521-DA11					DA	REP, Bearling	521-0107	0700
88	DM173600	P	DM173600		Fan					DB	Oriental MotorHRS16-BUL		
89	ME2701	P	ME2701		Wrench					DB			
90	ME2987	P	ME2987		Fin guard Ass'y					DB	Oriental MotorFG16D		
91	MU3629	R	MU3629	C	Peltier cooling unit		MU3609		Peltier ass'y	DB	Temp electricFA1004 improvementMU3202+ for DA		
92	MU6901	R	MU6901		Peltier ass'y	1	MU6900#			DB	New peltier (Maker) Mizutani	521-0160	1200
93	MU6901	R	MU6901		Peltier ass'y	1	MU6900#			DB	New peltier (Maker) Mizutani	526-0031	1200
94	MU5199	P	MU5199		Peltier cont. PCB				514BTMC1A	DB	For Reagent compartment		1100
95	DZ235500	P	DZ235500		Bar code reader					DC	Olympus SymbolLSK6220-I2B0JG		1100
96	MU5536	R	MU5462		Peltier cooling unit		MU5462		Peltier ass'y	DD	Temp. ElectricPA2407NMU5462+packing material for DC	521-0018	
97	MU5530	P	MV2355		Peltier cont. PCB		MV2355		521BTMC1A	DD	For STAT compartment		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
98			MU4627		EC driver cont. PCB		MV1885		520BADC2A	EC			
99	MU4627	P	MU4627	D	EC driver cont. PCB		MV1885		520BADC2A	EC		521-0108	1100
100			MU4664	B	M520-EC02		MU4663		M520-EC02	EC			
101			MU4664	F	M520-EC02		MU4663		M520-EC02	EC		521-0082	0700
102			MU4664	G	M520-EC02		MU4663		M520-EC02	EC		521-0090	0700
103			MU4663#	H	M520-EC02		MU4663		M520-EC02	EC	Add R=220Kohm	521-0108	1100
104	MU4664	R	MU4663#	J	M520-EC02					EC	LM guide grease AFB -> AFC	521-0162	1200
105	MU4664	R	MU4663#	J	M520-EC02					EC	LM guide grease AFB -> AFC	526-0034	1200
106	MU4396	P	MU4396		Motor driver					FA	Oriental MotorCSD5814NDriver		
107	MU5501	R	MU5501	C	M521-FA01		MU5455		M521-FA01	FA		521-0132	1100
108	MU6775	R	MU6508#		M526-FA01	1				FA			1000
109	MU6853	P	MU6853		FA cable set					FA	FA/FD cable failure	521-0132	1100
110	MU5528	P	MV2347		S probe transfer cont. PCB		MV2347		520BPRC1A	FA			
111	MU5521	P	MV2351	1.0	S probe transfer cont. PROM		MV2351		514PPR09	FA			
112	MU5529	P	MV2354		S liquid level detection PCB		MV2354		521BRLS1A	FA			
113	MU6776	P	MV3269		526BRLS1A	1				FA			1000
114	MB1992	P	MB1992		Tube					FB	Straight T1x2x2100 (cut and use)		
115	MU3632	R	MU3164#	D	M520-FB01		MU3164		M520-FB01	FB			
116	MU3633	R	MU3165#	D	M520-FC01		MU3165		M520-FC01	FC		521-0156	1100
117	MU3633	R	MU3165#	D	M520-FC01		MU3165		M520-FC01	FC		526-0021	1200
118	MU3634	R	MU3367	C	M520-FC11		MU3367		M520-FC11	FC		521-0156	1100
119	MU3634	R	MU3367	C	M520-FC11		MU3367		M520-FC11	FC		526-0021	1200
120	MU5181	P	MU5181		R1 liquid level detection PCB		MV2076		514BRLS2A	FD	For R1		
121	MU5365	P	MU5365		R probe transfer cont. PCB		MV2329		514BPCRC1A	FD			
122	MU5366	P	MU5366	1.0	R probe transfer cont. PROM		MV2330		514PPR12	FD			
123	MU5502	R	MU5502	D	M521-FD01		MU5456		M521-FD01	FD		521-0132	1100
124	MU5503	R	MU5503	D	M521-FD11		MU5457		M521-FD11	FD		521-0132	1100
125	MU6777	R	MU6509#		M526-FD01					FD			1000
126	MU6854	P	MU6854		FD cable set					FD	FA/FD cable failure	521-0132	1100
127	MU6860	P	MU6860		PCB mount set					FD	FA/FD cable failure	521-0132	1100
128	MU5546	P	MV2712		R2 liquid level detection PCB		MV2712		521BRLS2A	FD	For R2		
129	MU6774	P	MV3268		516BRLS2A	1				FD			1000
130	MU6778	R	MU6510#		M526-FD11					FD			1000
131	MU6779	P	MV3270		526BRLS2A	1				FD			1000
132	MU5534	R	MU5533		Incubation Bath		MU5533		Incubation Bath	GA	Incubation bath + grating	521-0004	

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
133	MU6174	R	MU6173#		Incubation Bath		MU6173		Incubation Bath	GA	Incubation bath + grating	521-0040	0700
134	MU5018	R	MU5018	A	degasser					HA	ERCDegasser	521-0117	1100
135	MU5372	P	MU5372		Vacuum Pump					HA			
136	ME5852	P	ME5852		degasser pipe					HA			1300
137	MD6998	P	MD6998		Tube					ISE	Poalon tube 2.5x4.5x10000		
138	MU2945	P	MU2945		520 valve ass'y					ISE	Dilution valve		
139	MU3584	R	MU3584		Analog board		MV1041			ISE			
140	MU3585	P	MU3585		Level detection needle		MU3229			ISE			
141	MU5360	P	MU5360		015 IPL PPR		MV2191			ISE	M015 IPL ROM		
142	MU5361	P	MU5361		CPU board		MV2190			ISE	CPU PCB		1100
143	MU5386	P	MU5386		Tube set					ISE	D pot - flow cell connection tube ass'y		
144			MV1115		014C0005					ISE	Modify for ISE D-cup overflow	521-0143	1200
145			MV1115		014C0005					ISE	Modify for ISE D-cup overflow	526-0006	1200
146	ZM1187	P	ZM1187		Tube					ISE	Poalon tube 1.6x3.2x5001		
147	MU8165	C	MV2551	2.1	Program CD					DPR	For Japan, UG		
148			MV3308	4.2	Program CD					DPR	For Japan, UG	521-0115	1100
149			MV3308	4.2	Program CD					DPR	For Japan, UG	526-0010	1200
150	MU8298	C	MV3308	5.0	Program CD					DPR	For Japan, UG	526-0027	1200
151			MV2552	1.1	Program CD					DPR	For OAI		
152			MV2552	1.3	Program CD					DPR	For OAI	521-0054	0600
153			MV2552	2.0	Program CD					DPR	For OAI		0600
154	MU8166	C	MV2552	2.1	Program CD					DPR	For OAI		0600
155			MV3309	4.2	Program CD					DPR	For OAI, UG	526-0011	1200
156	MU8299	C	MV3309	5.0	Program CD					DPR	For OAI, UG	526-0028	1300
157			MV2553	1.1	Program CD					DPR	For ODH		
158			MV2553	2.0	Program CD					DPR	For ODH	521-0068	0600
159	MU8167	C	MV2553	2.1	Program CD					DPR	For ODH	521-0109	0800
160			MV3310	4.2	Program CD					DPR	For ODH, UG	521-0141	1100
161			MV3310	4.2	Program CD					DPR	For ODH, UG	526-0012	1200
162	MU8300	C	MV3310	5.0	Program CD					DPR	For ODH, UG	526-0029	1300
163			MV2554	1.1	Program CD					DPR	For Asia	521-0025	
164			MV2554	2.0	Program CD					DPR	For Asia	521-0064	0600
165	MU8168	C	MV2554	2.1	Program CD					DPR	For Asia	521-0065	0600
166			MV3311	4.2	Program CD					DPR	For Asia, UG	521-0142	1100
167			MV3311	4.2	Program CD					DPR	For Asia, UG	526-0013	1200
168	MU8301	C	MV3311	5.0	Program CD					DPR	For Asia, UG	526-0030	1200
169	MU4248	P	MU4248		Pressure decreasing Valve ass'y					OP	Regulator, Mater		
170	DW480800	P	DW480800		Printer cable 4m					OPC			
171	MU4135	P	MU4135		OPH I/F PCB		MV0841		240BWPC1A	OPH	For Asia		
172	MU5055	P	MU5055		OPH I/F PCB		MV1948		520BWPC2A	OPH	For ODH		

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
173	MU5545	P	MU5545		OPH I/F PCB		MV1957		520BWPC3A	OPH	For OAI		
174	MU2552	P	MU2552		M510-SA01		MU2465#		M510-SA01	SA			1100
175	MU8320	C	ME5357		NE Rack adapter	10				CSS	Common with all AU product		1300
176	OT3364		MF2273		AFC Grease						For FA/FD CH sfaft	521-0177	1300
176	OT3364		MF2273		AFC Grease						For FA/FD CH sfaft	526-0055	1300

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DH125000		Connector pin	2							1000
2			DH174000		Connector pin	2							1000
3			DK117800		Housing	1							1000
4			DK121300		Housing	1							1000
5			DL200200		Transformer	1							1000
6	DM076700	P	DM076700		AC fan	5					Minebea4710PS-10TB30-B00		1000
7	DM085900	P	DM085900		AC fan	2							1000
7	DM233500	P	DM233500		AC fan	2						526-0051	1300
8	MU6455	P	MD215400		DC pump	3							1000
9	DP067900	P	DP067900		Converter	1					(PS1) Nemic lambda LWT30H-5FF		1200
10	DP070900	P	DP070900		Converter	1					(PS2) Nemic lambda LWT15H-5FF		1200
11	DP076200	R	DP076200		Converter	1					(PS5) Koki Electric OLY-40UC		1200
12	DP084800	P	DP084800		Converter	2					(PS3, 4) Nemic lambda JWS600-24		1200
13	DX039600	P	DX039600		SSR	1					Japan inter D2W115CD For Cuv wash		1000
14			DY201300		Magnet	1							1000
15			DY203700		Push button SW	1							1000
16			DY206900		Push button SW	1							1000
17			DY207000		Key top	1							1000
18			DY207100		Key top	1							1000
19	DZ235400	P	DZ235400		Barcode reader	1					Olympus symbol LSK6220-I1B0JG For rack ID		1100
20			GB5314		T fixer	1							1000
21	GB5598	P	GB5598		Y connector 1	11					For 7mm tube		1000
22	GB5599	P	GB5599		Y connector 2	13					For 2.5mm tube		1000
23			GB6273		Lifelon tube	1							1000
24			GB6575		Fixing screw	3							1000
25			GB6869		Lifelon tube	5							1000
26			GB6871		Lifelon tube	2							1000
27			GB6873		Lifelon tube	4							1000
28			GB6875		Lifelon tube	5							1000
29			GB6881		Lifelon tube	1							1000
30			GB6883		Lifelon tube	2							1000
31			GB7153		Lifelon tube	2							1000
32			GB7155		Lifelon tube	4							1000
33			GB7160		Lifelon tube	2							1000
34			GB7161		Lifelon tube	2							1000
35			GB7162		Lifelon tube	1							1000
36			GB7163		Lifelon tube	2							1000
37			GB7324		Lifelon tube	4							1000
38			GB7325		Lifelon tube	6							1000
39			GB7507		Lifelon tube	5							1000
40			GB7508		Lifelon tube	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			GB7510		Lifelon tube	3							1000
42			GB7776		T fixer	2							1000
43			GB9540		Lifelon tube	5							1000
44			GB9541		Lifelon tube	2							1000
45			GS4564		C16.7	24							1000
46			MA1110		Name plate	3							1000
47	MA2212	P	MA2212		Teflon tube	2					Both side conical shape T1.5x2.5X150		1000
48	MA2213	P	MA2213		Teflon tube	2					Both side conical shape T1.5x2.5x270		1000
49	MA2214	P	MA2214		Teflon tube	1					Both side conical shape T1.5x2.5x490		1000
50	MA2217	P	MA2217		Teflon tube	1					Both side conical shape T1x2x100		1000
51			MA2386		Fixer	10							1000
52			MA2561		Name plate	1							1000
53	MA2632	P	MA2632		Teflon tube	1					One side conical shape T1x2x300		1000
54	MA2997	P	MA2997		Y connector	1					For 5mm tube		1000
55			MA3134		Tube	2							1000
56			MA3135		Tube	3							1000
57			MA3137		Tube	2							1000
58			MA3143		Tube	1							1000
59			MA3225		Lifelon tube	1							1000
60			MA3226		Lifelon tube	2							1000
61			MA3227		Lifelon tube	3							1000
62			MA3307		Collar	2							1000
63	MA3511	P	MA3511		Teflon tube	1					Both side conical shape T1x2x550		1000
64			MA3649		Lifelon tube	1							1000
65			MA3730		Mark Band	2							1000
66			MA3731		Mark Band	2							1000
67			MA3751		Mark Band	2							1000
68			MA3752		Mark Band	1							1000
69			MA3753		Mark Band	1							1000
70			MA3754		Mark Band	1							1000
71			MA4757		Tube	1							1000
72			MA4759		Tube	1							1000
73			MA4819		Mark Band	1							1000
74			MA4907		Tube	1							1000
75			MA4912		Mark Band	4							1000
76			MA4913		Mark Band	4							1000
77	MA4966	P	MA4996		Lifelon tube	6					Lifelon 7x13x10m SD0133		1000
78			MA5107		Lifelon tube	3							1000
79			MA5186		Mark Band	2							1000
80			MA5187		Mark Band	4							1000
81			MA5621		Joint	2							1000
82	MA5834	P	MA5834		L tube	25					For 12mm tube (Q'ty 24 -> 25)		1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
83			MA6308		Cushion	4							1000
84			MA6939		Mouthpiece	6							1000
85			MA7092		Nut	6							1000
86			MA7137		Mouthpiece V	1							1000
87			MA7519		Joint	7							1000
88			MA7590		Joint	5							1000
89			MA7609		Condenser	1							1000
90			MA7644		Joint	5							1000
91			MA7663		Lifelon tube	2							1000
92			MA7664		Lifelon tube	1							1000
93			MA7665		Lifelon tube	1							1000
94			MA7666		Lifelon tube	2							1000
95			MA7667		Lifelon tube	23					12x18x60 Q'ty 21->23		1000
96			MA7670		Lifelon tube	1							1000
97			MA7679		Tube	1							1000
98			MA7681		Tube	1							1000
99			MA7683		Tube	1							1000
100			MA7723		Lifelon tube	1							1000
101			MA7724		Lifelon tube	2							1000
102			MA7726		Lifelon tube	4							1000
103			MA7727		Tube	2							1000
104			MA7728		Tube	1							1000
105			MA8183		Pin	1							1000
106	MB0018	P	MB0018		L tube	2					For 7mm tube		1000
107	MB0020	P	MB0020		T tube	23					For 12mm tube		1000
108			MB0150		Tube	1							1000
109			MB0151		Tube	3							1000
110			MB0157		Tube	1							1000
111			MB0158		Tube	1							1000
112			MB0764		Tube	1							1000
113			MB0766		Tube	1							1000
114			MB1602		Tube	1							1000
115			MB1747		Tube	4							1000
116			MB1973		Cord fixer	60							1000
117			MB2500		Lifelon tube	3							1000
118			MB2751		Receptacle	6							1000
119			MB3907		Screw	6							1000
120			MB3913		Top plate	1							1000
121			MB5662		Teflon tube	1							1000
121			ME7878		Tube fixer	1					Eleminated by 521-0034		1000
121			ME7130		Teflon tube	1					Connect to S valve with MD2796		1000
122			MB5753		Tube	24							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
123			MB7597		Pin	27							1000
124			MB7737		O ring	1							1000
125	MB7738	P	MB7738		Y connector	6					For 12mm tube		1000
126			MB8014		Knob	1							1000
127			MB8063		Hinge nut	4							1000
128			MB8176		MG catch	2							1000
129			MB8612		Name plate	1							1000
130			MB8889		Tube	1							1000
131			MB8896		Tube	6							1000
132			MB9158		Tube	3							1000
133	MB9796	P	MB9796		Diaphragm	1					1.1(5)		1000
134			MB9808		EC label	1							1000
135			MD0004		Lifelon tube	1							1000
136			MD0005		Lifelon tube	9							1000
137			MD0009		Lifelon tube	1							1000
138	ZM3079	C	MD0077		Filter	2					300 micron for DI water		1000
139			MD0591		Teflon tube	1							1000
140			MD0663		Rubber tube	4							1000
141			MD1191		Lifelon tube	6							1000
142			MD1192		Lifelon tube	2							1000
143			MD1259		C16.7	16							1000
144			MD1260		C16.7	34							1000
145			MD1409		Lifelon tube	5							1000
146			MD1436		Tube	1							1000
147			MD1438		CE012	1							1000
148			MD1440		CE012	1							1000
149			MD1441		CE012	1							1000
150			MD1445		CE012	1							1000
151			MD1759		Name plate	3							1000
152			MD1883		Lifelon tube	2							1000
153			MD2770		Tube	1							1000
154			MD2773		Tube	4							1000
155			MD2780		Tube	1							1000
156	MD2796	P	MD2796		Teflon tube	1					One side conical shape T2x3x200		1000
157			MD2854		Teflon tube	2							1000
158			MD3915		C16.7	8							1000
159			MD7408		Prop	1							1000
160			MD7419		Positioning pin	1							1000
161			MD7476		Tube	2							1000
162			MD7477		Connector	4							1000
163			MD7562		PCB receptacle 1	1							1000
164			MD7563		PCB receptacle 2	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
165			MD7569		Cover L	1							1000
166			MD7572		Front door L	1							1000
167			MD7574		C cover F	1							1000
168			MD7575		C cover R	1							1000
169			MD7586		Cover base	1							1000
170			MD7588		Pin	4							1000
171			MD7589		L metal fittings	4							1000
172			MD7591		F post 1	1							1000
173			MD7593		F pillar 2	1							1000
174	MU9593	C	MD7596		Filter	3					140x140 for small fan		1000
175	MU9594	C	MD7597		Filter	1					160x305 for large fan		1000
176			MD7598		Hinge R	2							1000
177			MD7599		Hinge L	2							1000
178			MD7602		Catch	2							1000
179			MD7603		Catch plate	1							1000
180			MD7604		Hinge	2							1000
181			MD7606		Cover 1	1							1000
182			MD7609		Cover 4	1							1000
183			MD7610		Cover 5	1							1000
184			MD7611		Cover 6	1							1000
185			MD7612		Cover 7	1							1000
186			MD7613		Cover 8	1							1000
187			MD7614		Lamp cover	1							1000
188			MD7616		Cap	24							1000
189			MD7617		Pillar C	16							1000
190			MF0241		M cup 1	2							1000
191			MD7619		M cup 2	2							1000
192			MD7620		MC base	4							1000
193			MD7638		Pillar C	8							1000
194			MD7639		PCB receptacle	1							1000
195			MD7640		Cover	1							1000
196			MD7641		Lamp receiver	1							1000
197			MD7642		Pillar C	5							1000
198			MD7644		Valve plate	2							1000
199			MD7645		Fan plate 1	1							1000
200			MD7646		Fan plate 2	3							1000
201			MD7647		Joint	1							1000
202			MD7648		Joint 2	1							1000
203			MD7649		C cup	1							1000
204			MD7704		Fixing plate	1							1000
205			MD7712		Mounting plate	1							1000
206			MD7716		SA plate	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
207			MD7717		SA plate	1							1000
208			MD7719		Covering	1							1000
209			MD7727		C plate 2	1							1000
210			MD7728		R shelf 2	1							1000
211			MD7729		Partition plate 3	1							1000
212			MD7732		Valve plate	1							1000
213			MD7734		Fixing plate	1							1000
214			MD7735		Pipe table 3	1							1000
215			MD7737		Receptacle	1					to ME7957		1000
215			ME7957		Receptacle	1							1000
215			MF0199		Receptacle	1							1000
216			MD7738		Lid	1							1000
217	MU9638	C	MD7740		O ring	6					Cuv wash water dispense		1000
218			MD7741		Fixer	1							1000
218			ME7956		Fixer	1					to ME7956		1000
218			MF0198		Fixer	1							1000
219			MD7743		Pin	2							1000
220			MF0238		Pipe table 1	2							1000
221			MD7745		Pipe table 2	1							1000
222			MD7746		Terminal 1	1							1000
223			MD7747		Nozzle receptacle 1	1							1000
224			MD7748		Cap	6							1000
225	MD7749	P	MD7749		Packing	6					Cuv wash terminal packing		1000
226			MD7750		Terminal	1							1000
227			MD7751		Nozzle receptacle 2	1							1000
228			MD7752		Terminal 3	1							1000
229			MD7753		Nozzle receptacle 3	1							1000
230			MD7754		Terminal 4	1							1000
231			MD7755		Nozzle receptacle 4	1							1000
232			MD7757		Flat plate	1							1000
233			MD7759		Hinge table	1							1000
234			MD7760		Waste water bottle	1							1000
235			MD7761		Waste water lid	1							1000
236			MD7766		Valve plate 1	1							1000
237			MD7768		Manifold	1							1000
238			MD7769		Rubber vibration insulator	10							1000
239			MD7770		Rubber vibration insulator	2							1000
240			MD7772		Rubber vibration insulator	11							1000
241			MD7773		Mouthpiece	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
242			MD7774		Nut	4							1000
243			MD7775		Receptacle	1							1000
244			MD7776		Cap	1							1000
245	MU9596	C	MD7777		Plastic tank	1					DI water tank		1000
246			MD7778		C body	4							1000
247	MD7779	P	MD7779		C insert	4					Inner part for DI water tank mouthpiece		1000
248			MD7781		Ring	1							1000
249	MU9637	C	MD7784		O ring	1					For DI water tank filter		1000
250	MU9598	C	MD7785		Plastic tank	2					Detergent tank		1000
251	MD7786	P	MD7786		Cock	2							1000
252			MD7787		Mouthpiece	4							1000
253			MF0221		Bracket	3							1000
254			MD7789		Mouthpiece	2							1000
255			MD7796		Clamp	3							1000
256			MD7797		Spacer	6							1000
257			MD7799		Fan plate 1	1							1000
258			MD7803		P receptacle	1							1000
259			MD7804		Base 1	1							1000
260			MD7805		Base 2	1							1000
261			MD7806		Fan plate 2	1							1000
262			MD7807		Weight 1	1							1000
263			MD7808		Weight 2	2							1000
264			MD7809		Thermo receptacle	1							1000
265	MU9597	C	MD7821		Plastic tank	2					for pure detergent tank		1000
265			MF0205		ODI Cap	2							1000
266			MD7823		Mouthpiece	1							1000
267			MD7832		Mouthpiece	3							1000
268	MD7835	P	MD7835		Teflon tube	3					Both side conical shape T1.5x2.5x300		1000
269	MD7931	P	MD7931		Synapse	6					For T2		1000
270			MD7960		Mouthpiece	6							1000
271	MD9203	P	MD9203		Teflon tube	2					Both side conical shape T2x3x120		1000
272	MD9208	P	MD9208		Diaphragm 1	4					0.6 (2.5)		1000
273	MD9209	P	MD9209		Diaphragm 2	3					1.0 (2.5)		1000
274	MD9211	P	MD9211		Diaphragm 4	4					2.5 (5)		1000
275			MD9212		Mouthpiece	1							1000
276			MD9559		L plate	1							1000
277			MD9810		Saddle	6							1000
278			MD9812		Grommet	1							1000
279			MD9821		Mouthpiece	2							1000
280			MD9839		Terminal 5	1							1000
281			MD9840		Terminal 6	1							1000
282			MD9841		Nozzle receptacle 5	2							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
283			MD9856		Stopper	1							1000
284			MD9860		Blanket R	1							1000
285			MD9861		Pipe table R	1							1000
286			MD9862		C cup base	1							1000
287			MD9867		SW plate	1							1000
288			MD9890		Connector	4							1000
289	MD9896	P	MD9896		Gas spring	2							1000
290			MD9954		C cup lid	1							1000
291			MD9976		Name plate	1							1000
292			MD9986		Teflon tube	4							1000
293			MD9987		Lifelon tube	10							1000
294			MD9988		Teflon tube	1							1000
295			MD9989		Teflon tube	6							1000
296			MD9991		Teflon tube	2							1000
297			MD9993		Teflon tube	2							1000
298			MD9994		Teflon tube	2							1000
299			MD9997		Lifelon tube	2							1000
300			MD9998		Lifelon tube	3							1000
301			MD9999		Lifelon tube	1							1000
302			ME0001		Lifelon tube	6							1000
303			ME0003		Lifelon tube	1							1000
304			ME0046		N receptacle	2							1000
305			ME0052		Reinforcement plate	2							1000
306			ME0175		Bush	3							1000
307			ME0215		PCB plate	1							1000
308			ME0304		Valve plate	1							1000
309			ME0320		Teflon tube	3							1000
310			ME0366		Tank lid	1							1000
311			ME0957		PCB cover	1							1000
312			ME1357		Receptacle	1							1000
313			ME1358		Fixer	1							1000
314			ME1359		Cap	1							1000
315			ME1360		Mounting plate	1							1000
316			ME1366		Name plate	1							1000
317			ME1514		T tube C	2							1000
318			ME1516		Lifelon tube	1							1000
319			ME1565		Valve plate	1							1000
320	ME1580	P	ME1580		Diaphragm 5	1					2.0 (12)		1000
321			ME1639		Name plate	1							1000
322			ME2577		Hinge	3							1000
323			ME2900		Lid	1							1000
324			ME3611		F post 5	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
325			ME4305		Coolant	2							1000
326			ME4984		Rubber	2							1000
327			ME4997		L plate	1							1000
328			ME5004		Joint 1	6					to ME7957		1000
329			ME5005		Joint 2	6					to ME7956		1000
330			ME5008		Mouthpiece	5							1000
331			ME5009		Mouthpiece	4							1000
332	ME5010	P	ME5010		Diaphragm 3	2					0.7 (2.5)		1000
333			ME5070		Pillar 2	1						526-0046	1300
334			ME5927		Name plate	1							1000
335			ME6346		Cover U	1							1000
336			ME6347		Cover F	1							1000
336			MF0303		Cover F	1					For OAI		1200
337			MF0236		Frame	1							1000
338			ME6373		F tray	1							1000
339			ME6374		K plate 1	1							1000
340			ME6375		Rear plate	1							1000
341			MF0244		Fixing plate	1							1000
342			ME6377		Partition plate	1							1000
343			MF0245		P cover	1							1000
344			ME6379		P base	1							1000
345			ME6380		D cover	1							1000
346			ME6381		R tray 1	1							1000
347			ME6382		Guide	1							1000
348			ME6383		Hook	1							1000
349			ME6384		Valve plate 2	1							1000
350			ME6385		Tank cover	1							1000
351			ME6386		Cover R	1							1000
352			ME6387		Rear cover	1							1000
353			ME6388		Front door R	1							1000
354			ME6389		Rear door	1							1000
355			ME6390		Right cover U	1							1000
356			ME6391		Window	1							1000
357			ME6392		Reinforcement plate	1							1000
358			ME6393		Receptacle	1							1000
359			ME6394		Pillar L	1							1000
360			ME6395		Pillar R	1							1000
361			ME6396		Beam	1							1000
362			ME6397		Pillar cover	1							1000
363			ME6398		Pillar cover	1							1000
364			ME6399		F pillar 4	1							1000
365			ME6400		Rear cover	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
366			ME6401		C base	1							1000
367			ME6403		CC cover	1							1000
368			ME6404		CB cover	1							1000
369			ME6405		DD duct 1	1							1000
370			ME6406		Right cover L	1							1000
371			ME6407		SW plate	1							1000
372			ME6408		Sesnor cover	1							1000
373			MF0237		Power supply plate	1							1000
374			MF0247		Power supply plate	1							1000
375			ME6411		K plate 2	1							1000
376			ME6412		PCB cover	1							1000
377			ME6413		Side cover	1							1000
378			ME6414		Cover 2	1							1000
379			ME6415		Cover 3	1							1000
30			GB6883		Lifelon tube	2							1000
31			GB7153		Lifelon tube	2							1000
32			GB7155		Lifelon tube	4							1000
33			GB7160		Lifelon tube	2							1000
34			GB7161		Lifelon tube	2							1000
35			GB7162		Lifelon tube	1							1000
36			GB7163		Lifelon tube	2							1000
37			GB7324		Lifelon tube	4							1000
38			GB7325		Lifelon tube	6							1000
39			GB7507		Lifelon tube	5							1000
380			ME6416		PCB plate	1							1000
381			ME6417		Support plate	1							1000
382			ME6418		Pump base	1							1000
383			ME6422		Box	1							1000
384			ME6423		Inside plate	1							1000
385			ME6424		Bottom plate	1							1000
386			MF0243		RP plate	1							1000
387			ME6437		Cover	1							1000
388			ME6440		Cover	1							1000
389			ME6520		CA cover	1							1000
390			ME6537		Fixer B	1							1000
391			ME6724		DD duct 2	1							1000
392			ME6725		C base 2	1							1000
393			ME6729		ID base 1	1							1000
394			ME6730		ID base 2	1							1000
395			ME6731		Support plate	1							1000
396			ME6732		DC cover 1	1							1000
397			ME6733		DC cover 2	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
398			ME6735		Pillar C	1							1000
399			ME6736		Pillar C	2							1000
400			ME6737		Lifelon tube	0					Eliminated		1000
401			ME6943		Support plate	1							1000
402			ME7139		Stay	2							1000
403			ME7191		S cap 1	3					Mold		1000
404			ME7223		C base 2	1							1000
405			ME7224		Bottle	1							1000
406			ME7385		Cover B	1							1000
407			ME7492		Bracket 5	1							1000
408			ME7563		PCB cover	1							1000
409			ME7758		FG plate	3							1000
410			MU1693		Thermistor ass'y 1	1	DH128900		Connector pin	3			1000
411			MU1693		Thermistor ass'y 1	1	DK150000		Housing	1			1000
412			MU1693		Thermistor ass'y 1	1	DO001700		heat shrink tube				1000
413			MU1693		Thermistor ass'y 1	1	DO045400		Heat shrink tube				1000
414			MU1693		Thermistor ass'y 1	1	DT020400			1			1000
415	MU1693	P	MU1693		Thermistor ass'y 1	1	MU1693#						1000
416			MU2929		Valve ass'y 2	1	DH239000		Connector pin	2			1000
417			MU2929		Valve ass'y 2	1	DK432500		Housing	1			1000
418			MU2929		Valve ass'y 2	1	DM071400			1			1000
419	MU2929	P	MU2929		Valve ass'y 2	1	MU2929#						1000
420			MU2944		Valve ass'y 3	2	DH128900		Connector pin	2			1000
421			MU2944		Valve ass'y 3	2	DK121300		Housing	1			1000
422			MU2944		Valve ass'y 3	2	DM074000		EM valve	1			1000
423	MU2944	P	MU2944		Valve ass'y 3	2	MU2944#						1000
424			MU2945		Valve ass'y 4	1	DH128900		Connector pin	2			1000
425			MU2945		Valve ass'y 4	1	DK121300		Housing	1			1000
426			MU2945		Valve ass'y 4	1	DM069600		EM valve	1			1000
427	MU2945	P	MU2945		Valve ass'y 4	1	MU2945#						1000
428			MU2949		Valve ass'y 8	3	DH128900		Connector pin	2			1000
429			MU2949		Valve ass'y 8	3	DK121300		Housing	1			1000
430			MU2949		Valve ass'y 8	3	DM155800		EM valve	1			1000
431	MU2949	P	MU2949		Valve ass'y 8	3	MU2949#						1000
432			MU2950		Valve ass'y 9	1	DH128900		Connector pin	2			1000
433			MU2950		Valve ass'y 9	1	DK121300		Housing	1			1000
434			MU2950		Valve ass'y 9	1	DM155700		EM valve	1			1000
435	MU2950	P	MU2950		Valve ass'y 9	1	MU2950#						1000
436			MU2953		Fan ass'y 1	1	DH128900		Connector pin	2			1000
437			MU2953		Fan ass'y 1	1	DK121300		Housing	1			1000
438			MU2953		Fan ass'y 1	1	DM155100		AC fan	1			1000
439	MU2953	P	MU2953		Fan ass'y 1	1	MU2953#						1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
440			MU2961		Heater ass'y 3	1	DH021700			2			1000
441			MU2961		Heater ass'y 3	1	DH029500		Connector pin	2			1000
442			MU2961		Heater ass'y 3	1	DH239000		Connector pin	2			1000
443			MU2961		Heater ass'y 3	1	DK432500		Housing	1			1000
444			MU2961		Heater ass'y 3	1	DO007100		Sleeve	2			1000
445			MU2961		Heater ass'y 3	1	DT060400			1			1000
446			MU2961		Heater ass'y 3	1	DY207400		thermostat	1			1000
447			MU2961		Heater ass'y 3	1	MA2665			1			1000
448			MU2961		Heater ass'y 3	1	MA2666			2			1000
449			MU2961		Heater ass'y 3	1	MA4967		Cap	2			1000
450			MU2961		Heater ass'y 3	1	MA7061		O ring	2			1000
451			MU2961		Heater ass'y 3	1	MD7790			1			1000
452			MU2961		Heater ass'y 3	1	MD7791		Lid 2	1			1000
453			MU2961		Heater ass'y 3	1	MD7795			1			1000
454			MU2961		Heater ass'y 3	1	MD9797		Mouthpiece	1			1000
455			MU2961		Heater ass'y 3	1	MD9811		pipe	1			1000
456			MU2961		Heater ass'y 3	1	MD9857			1			1000
457	MU2961	P	MU2961		Heater ass'y 3	1	MU2961#						1000
458			MU2961		Heater ass'y 3	1	MU3539			1			1000
459			MU2963		Float SW	2	DW410100			1			1000
460			MU2963		Float SW	2	DY200500		Float SW	1			1000
461	MU2963	P	MU2963		Float SW	2	MU2963#			1			1000
462			MU2964		Float SW	1	DW410100			1			1000
463			MU2964		Float SW	1	DY200600		Float SW	1			1000
464	MU2964	P	MU2964		Float SW	1	MU2964#			1			1000
465			MU2965		Float SW 4	1	DH128900		Connector pin	2			1000
466			MU2965		Float SW 4	1	DK121300		Housing	1			1000
467			MU2965		Float SW 4	1	DY200700		Float SW	1			1000
468	MU2965	P	MU2965		Float SW 4	1	MU2965#						1000
469			MU2967		Heater ass'y 1	1	DH021700			2			1000
470			MU2967		Heater ass'y 1	1	DH029500		Connector pin	2			1000
471			MU2967		Heater ass'y 1	1	DH239000		Connector pin	2			1000
472			MU2967		Heater ass'y 1	1	DK432500		Housing	1			1000
473			MU2967		Heater ass'y 1	1	DO007100		Sleeve	2			1000
474			MU2967		Heater ass'y 1	1	DT060300			1			1000
475			MU2967		Heater ass'y 1	1	DY207400		thermostat	1			1000
476			MU2967		Heater ass'y 1	1	MA2666			2			1000
477			MU2967		Heater ass'y 1	1	MA4967		Cap	2			1000
478			MU2967		Heater ass'y 1	1	MA7059			1			1000
479			MU2967		Heater ass'y 1	1	MA7060			2			1000
480			MU2967		Heater ass'y 1	1	MA7061		O ring	2			1000
481			MU2967		Heater ass'y 1	1	MA7066			1			1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
482			MU2967		Heater ass'y 1	1	MA7092		Nut	1			1000
483			MU2967		Heater ass'y 1	1	MD7790			1			1000
484			MU2967		Heater ass'y 1	1	MD7792		Pipe	1			1000
485			MU2967		Heater ass'y 1	1	MD7794			1			1000
486			MU2967		Heater ass'y 1	1	MD9811		pipe	1			1000
487	MU2967	P	MU2967		Heater ass'y 1	1	MU2967#						1000
488			MU3223		M014-EF01	1	MA1880		Mouthpiece plate	4			1000
489			MU3223		M014-EF01	1	MA1881		Mouthpiece	4			1000
490			MU3223		M014-EF01	1	MA1882		R pipe	2			1000
491			MU3223		M014-EF01	1	MA1884		R block	1			1000
492			MU3223		M014-EF01	1	MU3223#						1000
493			MU3236		DIAG SW 2	1	DH128900		Connector pin	2			1000
494			MU3236		DIAG SW 2	1	DK121300		Housing	1			1000
495			MU3236		DIAG SW 2	1	DO012300		Heat shrink tube				1000
496			MU3236		DIAG SW 2	1	DW223000						1000
497			MU3236		DIAG SW 2	1	DY090400		Push button SW	1			1000
498	MU3236	P	MU3236		DIAG SW 2	1	MU3236#						1000
499			MU5943		Thermistor ass'y 2	1	DH128900		Connector pin	3			1000
500			MU5943		Thermistor ass'y 2	1	DK150000		Housing	1			1000
501			MU5943		Thermistor ass'y 2	1			Thermistor	1			1000
502	MU5943	P	MU5943		Thermistor ass'y 2	1	MU5943#						1000
503			MU3532		Heater ass'y 4	1	DH021700			2			1000
504			MU3532		Heater ass'y 4	1	DH029500		Connector pin	2			1000
505			MU3532		Heater ass'y 4	1	DH239000		Connector pin	2			1000
506			MU3532		Heater ass'y 4	1	DK432500		Housing	1			1000
507			MU3532		Heater ass'y 4	1	DO007100		Sleeve	2			1000
508			MU3532		Heater ass'y 4	1	DT028900			1			1000
509			MU3532		Heater ass'y 4	1	DY207400		thermostat	1			1000
510			MU3532		Heater ass'y 4	1	MA2666			2			1000
511			MU3532		Heater ass'y 4	1	MA4967		Cap	2			1000
512			MU3532		Heater ass'y 4	1	MA7061		O ring	2			1000
513			MU3532		Heater ass'y 4	1	MD7791		Lid 2	1			1000
514			MU3532		Heater ass'y 4	1	MD7795			1			1000
515			MU3532		Heater ass'y 4	1	MD9797		Mouthpiece	2			1000
516			MU3532		Heater ass'y 4	1	MD9811		pipe	1			1000
517			MU3532		Heater ass'y 4	1	MD9859			1			1000
518			MU3532		Heater ass'y 4	1	MU6467			1			1000
519	MU3532	P	MU3532	B	Heater ass'y 4	1	MU3532#						1000
520			MU3537		M520-EF01	1	DH021700			2			1000
521			MU3537		M520-EF01	1	DH128900		Connector pin	3			1000
522			MU3537		M520-EF01	1	DH238700		Connector pin	4			1000
523			MU3537		M520-EF01	1	DH239000		Connector pin	6			1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
524			MU3537		M520-EF01	1	DK150000		Housing	1			1000
525			MU3537		M520-EF01	1	DK432500		Housing	1			1000
526			MU3537		M520-EF01	1	DK432600		Housing	1			1000
527			MU3537		M520-EF01	1	DK432800		Housing	1			1000
528			MU3537		M520-EF01	1	DO007100		Sleeve	2			1000
529			MU3537		M520-EF01	1	DT022800			2			1000
530			MU3537		M520-EF01	1	DT035600		Thermistor	1			1000
531			MU3537		M520-EF01	1	DW015900		WIRE AWG18 W				1000
532			MU3537		M520-EF01	1	DW016100		WIRE AWG18 H				1000
533			MU3537		M520-EF01	1	DY207400		thermostat	1			1000
534			MU3537		M520-EF01	1	MA1880		Mouthpiece plate	4			1000
535			MU3537		M520-EF01	1	MA1881		Mouthpiece	4			1000
536			MU3537		M520-EF01	1	MA1882		R pipe	2			1000
537			MU3537		M520-EF01	1	MA1884		R block	1			1000
538			MU3537		M520-EF01	1	MB3912		front panel	2			1000
539			MU3537		M520-EF01	1	MB3913		Top plate	1			1000
540			MU3537		M520-EF01	1	MB4188		holder	1			1000
541	MU3537	P	MU3537		M520-EF01	1	MU3537#						1000
542			MU4149		P ass'y 2	1	DH239000		Connector pin	2			1000
543			MU4149		P ass'y 2	1	DK432500		Housing	1			1000
544			MU4149		P ass'y 2	1	DM170300			1			1000
545	MU4149	P	MU4149		P ass'y 2	1	MU4149#						1000
546			MU4153		Valve ass'y 11	3	DH128900		Connector pin	2			1000
547			MU4153		Valve ass'y 11	3	DK121300		Housing	1			1000
548			MU4153		Valve ass'y 11	3	DM170400		EM valve	1			1000
549	MU4153	P	MU4153		Valve ass'y 11	3	MU4153#			1			1000
549	MU6188	P	MU6188		Valve ass'y 11	3	MU6188#			1	Japan worbrow SVA-3(DM2028), for V32, V29, V26		1000
550			MU4730		Valve ass'y 12	1	DH128900		Connector pin	2			1000
551			MU4730		Valve ass'y 12	1	DK121300		Housing	1			1000
552			MU4730		Valve ass'y 12	1	DM179300		EM valve	1			1000
553	MU4730	P	MU4730		Valve ass'y 12	1	MU4730#			1			1000
553	MU6189	P	MU6189		Valve ass'y 12	1	MU6189#			1	Japan worbrow SVA-4(DM2027) for V23		1000
554			MU6197		Pressure sensor #	1	DH128900		Connector pin	5			1000
555			MU6197		Pressure sensor #	1	DK119100			1			1000
556			MU6197		Pressure sensor #	1	DO045600		Heat shrink tube				1000
557			MU6197		Pressure sensor #	1	DO097000						1000
557			MU6197		Pressure sensor #	1	DO045300						1000
557			MU6197		Pressure sensor #	1	DO121600						1000
558			MU6197		Pressure sensor #	1	DT070000			1			1000
559			MU6197		Pressure sensor #	1	ME4990		Joint	1			1000
560			MU6197		Pressure sensor #	1	ME4998			1			1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
561			MU6197		Pressure sensor #	1	ME4999		O ring	1			1000
561			MU6197		Pressure sensor #	1	ME8525		O ring	1			1000
562			MU4973		Pressure sensor #	1	MU4973#						1000
562	MU6197	P	MU6197		Pressure sensor #	1	MU6197#						1000
563			MU4983		514 LED ass'y	2	DH128900		Connector pin	2			1000
564			MU4983		514 LED ass'y	2	DO045400		Heat shrink tube				1000
565			MU4983		514 LED ass'y	2	DQ099800		LED	1			1000
566			MU4983		514 LED ass'y	2	DR720100			1			1000
567			MU4983		514 LED ass'y	2	DW223000						1000
568	MU4983	P	MU4983		514 LED ass'y	2	MU4983#						1000
569			MU5000		Valve ass'y 6	5	DH128900		Connector pin	2			1000
570			MU5000		Valve ass'y 6	5	DK121300		Housing	1			1000
571			MU5000		Valve ass'y 6	5	DM187300		EM valve	1			1000
572	MU5000	P	MU5000		Valve ass'y 6	5	MU5000#						1000
572	MU6910	P	MU6910		Valve ass'y 1	6	MU6910#				Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	526-0035	1200
572	MU5358	P	MU5358		Valve ass'y 6	5	MU5358#				Takasago MTV-2R-NM6G IN with 1 x ME5090		1000
572	MU6913	P	MU6913		Valve ass'y 2	6	MU6913#				Takasago MTV-2R-NM6G-11 IN with 1 x ME5090	526-0035	1200
572	MU5359	P	MU5359		Valve ass'y 6	6	MU5359#				Takasago MTV-2R-NM6G IN with2 x ME5090		1000
572	MU6914	P	MU6914		Valve ass'y 3	6	MU6914#				Takasago MTV-2R-NM6G-11 IN with2 x ME5090	526-0035	1200
573			MU5001		Counter ass'y	1	DD027700		counter	1			1000
574			MU5001		Counter ass'y	1	DH128900		Connector pin	2			1000
575			MU5001		Counter ass'y	1	DK121300		Housing	1			1000
576			MU5001		Counter ass'y	1	MU5001#						1000
577			MU5003		514 pump ass'y	1	DH239000		Connector pin	2			1000
578			MU5003		514 pump ass'y	1	DK432500		Housing	1			1000
579			MU5003		514 pump ass'y	1	DM183200		DC pump	1			1000
579			MU6455		514 pump ass'y	1	DM215400		DC pump	1			1000
580	MU5003	P	MU5003		514 pump ass'y	1	MU5003#						1000
580	MU6455	P	MU6455		514 pump ass'y	1	MU6455#				Iwaki RD-05V24-02		1000
581			MU5004		Pressure SW ass'y	1	DH128900		Connector pin	3			1000
582			MU5004		Pressure SW ass'y	1	DK150000		Housing	1			1000
583			MU5004		Pressure SW ass'y	1	DO045600		Heat shrink tube				1000
584			MU5004		Pressure SW ass'y	1	DY235600			1			1000
585			MU5004		Pressure SW ass'y	1	ME5089		Mouthpiece	1			1000
586	MU5004	P	MU5004		Pressure SW ass'y	1	MU5004#						1000
587			MU5011		514 valve ass'y	4	DH114900		Connector pin	2			1000
588			MU5011		514 valve ass'y	4	DH128900		Connector pin	2			1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
589			MU5011		514 valve ass'y	4	DK121300		Housing	1			1000
590			MU5011		514 valve ass'y	4	DM184200			1			1000
591			MU5011		514 valve ass'y	4	DW136400		WIRE AWG22 W				1000
592	MU5011	P	MU5011		514 valve ass'y	4	MU5011#						1000
593			MU5034		514 valve ass'y	7	DH114900		Connector pin	2			1000
594			MU5034		514 valve ass'y	7	DH128900		Connector pin	2			1000
595			MU5034		514 valve ass'y	7	DK121300		Housing	1			1000
596			MU5034		514 valve ass'y	7	DM179300		EM valve	1			1000
597			MU5034		514 valve ass'y	7	DW223000						1000
598	MU5034	P	MU5034		514 valve ass'y	7	MU5034#			1			1000
598	MU6190	P	MU6190		514 valve ass'y	7	MU6190#			1	Japan worbrow SVA-4(DM2027) for V16, V19, V10, V11, V12, V3, V4		1000
599			MU5444#		M521-AA01								1000
600			MU5532		Valve ass'y	2	DH128900		Connector pin	2			1000
601			MU5532		Valve ass'y	2	DK121300		Housing	1			1000
602			MU5532		Valve ass'y	2	DM194000		EM valve	1			1000
603	MU5532	P	MU5532		Valve ass'y	2	MU5532#						1000
604			MU2962		Float SW	1					to MU5881		1000
604	MU5881	P	MU5881		Float SW	1					OLV-25Z-4P ECN521-007 Old MU2962		1000
605			MV0583		Cable	1							1000
606	MU3596	R	MV1005	E	520BPHC1A	1							1000
606	MU3596	R	MV1005	F	520BPHC1A	1							1000
606	MU3596	R	MV1005	G	520BPHC1A	1							1000
607	MU3597	P	MV1013		520BRFC1A	1							1100
608	MU3598	R	MV1014		520BMXC1A	2							1000
609			MV1019	F	520BANL1A	1							1000
609			MV1019	G	520BANL1A	1					(10G) for Noise add condenser	526-0026	1200
609	MU3602	R	MV1019	G	520BANL1A	1					(11G) Correct Artwork	526-0032	1200
610	MU3606	P	MV1024		AC driver	1							1100
611	MU3607	P	MV1025		520BCNC1A	2							1000
612	MU3589	P	MV1030	3.0	520PPR03	1							1000
613			MV1037	2.1	520PPR10	1							1000
613	MU3595	P	MV1037	2.2	520PPR10	1							1000
614	MU3608	P	MV1051		520C0009	10							1000
615			MV1071		520C0029	3							1000
616			MV1072		520C0030	3							1000
617			MV1076		520C0034	1							1000
618			MV1077		520C0035	1							1000
619			MV1093		520C0051	1							1000
620			MV1099		520C0057	1							1000
621			MV1100		520C0058	1							1000
622			MV1395		520C0070	2							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
623			MV1402		520C0072	6							1000
624			MV1403		520C0073	2							1000
625			MV3288		526C0005	1							1000
626			MV1554		520C0077	2							1000
627	MU4659	P	MV1950		EF TEMP. CTRL PCB	1							1100
628	MU4660	P	MV1951		520BTMC8A	1							1000
629			MV1983		Resistance ass'y	1							1000
630	MU4731	P	MV1986		520BTMCAA	1							1100
631	MU5352	P	MV2067		514BNCS1A	1							1000
632	MU5195	P	MV2074		514BCPU1A	1							1100
633	MU5354	P	MV2181		514PPR10	1							1000
634	MU5525	P	MV2344		521BRSC1A	1							1100
635	MU5526	P	MV2345		521BRBC1A	1							1100
636	MU5527	P	MV2346		521BDSC1A	1							1100
637			MV2348	1.0	521PPR01	1							1000
637	MU5518	P	MV2348	1.1	521PPR01	1							1000
638	MU5519	P	MV2349	1.0	521PPR02	1							1000
639	MU5520	P	MV2350	1.0	521PPR03	1							1000
640	MU5522	P	MV2352	1.0	521PPR05	1							1000
641	MU5523	P	MV2353	1.0	521PPR06	2							1000
642			MV2555		521H0001	1							1000
643			MV2556		521H0002	1							1000
644			MV2557		521H0003	1							1000
645			MV2558		521H0004	1							1000
646			MV2577		521C0040	1							1000
647	MU5524	P	MV2611	1.0	521PPR07	1							1000
648			MV2711		521C0048	3							1000
649			MF0239		V base	1							1000
651			MF0240		Diaphragm 0.8	1							1000
652			MF0246		Reducer	2							1000
653			MV3287		526C0004	1							1000
654			MV3294		526C0008	1							1000
655			MV3293		526H0001	1							1000
656			MF0287		Reducer	2							1000

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M526-CA01(MU6506)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1	DS416100	P	DS416100		Photo reflector	2					Japan Arefu OH-101202-701		1000
2			GB5801		Spacer	2							1000
3			MA2561		Name plate	1							1000
4			MB1973		Cord fixer	7							1000
5			MB9808		EC label	1							1000
6	MF0227	P	MF0227		Bush	128							1000
6	MF0226	P	MF0226		Feed plate	64							1000
7			MD7395		Roller shaft	1							1000
8			MD7396		Roller	1							1000
9			MD7397		Pillar	3							1000
10			MD7399		Drive wheel	1							1000
11			MD7400		Sprocket	2							1000
12			MD7401		Pillar B	8							1000
13			ME1040		Supporting plate	1							1000
14			ME4880		Slide plate 2	1							1000
15			ME4881		PCB receptacle	1							1000
16	ME4882	P	ME4882		Spacer 1	3							1000
17			ME4883		Sensor plate	1							1000
18			ME4886		LED plate	1							1000
19			ME4933		Sensor plate 2	2							1000
20			ME5825		Sensor plate	2					ERCCode No.8813770Degasser tank		1000
21			MF0254		Rack base	1							1000
22			ME6455		S base 1	1							1000
23			MF0255		S base 2	1							1000
24			ME6457		S base 3	1							1000
25			ME6458		Support plate	1							1000
26			ME6459		Support plate	1							1000
27			MF0248		Slide plate 1	1							1000
28			ME6461		Protecting tape	1							1000
29			ME6463		plate	1							1000
30			ME6464		Motor base	1							1000
31			MF0249		Fixing plate	1							1000
32			MF0251		Slide plate	1							1000
32			MF0250		Slide plate 3	1							1000
33			MF0253		plate 3	1							1000
33			MF0252		plate 2	1							1000
34			ME6468		Sensor plate 3	1							1000
35			ME6469		Cover plate	1							1000
36			ME6794		Hinge L	1							1000
37			ME6795		Hinge R	1							1000
38			ME7494		Base fixation	1							1000
39			MU2811		Photo sensor	2	DH128900		Connector pin	3			1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
40			MU2811		Photo sensor	2	DK120300		Housing	1			1000
41			MU2811		Photo sensor	2	DO001800		Heat shrink tube				1000
42			MU2811		Photo sensor	2	DO002000		Heat shrink tube				1000
43			MU2811		Photo sensor	2	DO067100			2			1000
44			MU2811		Photo sensor	2	DS105500		Photo interrupter	1			1000
45			MU2811		Photo sensor	2	DW171000		UL1007 AWG26 B				1000
46			MU2811		Photo sensor	2	DW222900		UL1007 AWG26 D				1000
47			MU2811		Photo sensor	2	DW223000		UL1007 AWG26 W				1000
48			MU2811		Photo sensor	2	MB9873		tack	1			1000
49	MU2811	P	MU2811		Photo sensor	2	MU2811#						1000
50			MU4094		520 PM ass'y	1	DH114900		Connector pin	6			1000
51			MU4094		520 PM ass'y	1	DH128900		Connector pin	6			1000
52			MU4094		520 PM ass'y	1	DK119100		Housing	1			1000
53			MU4094		520 PM ass'y	1	DM128800		pulse motor	1			1000
54			MU4094		520 PM ass'y	1	DW136400		WIRE AWG22 W				1000
55			MU4094		520 PM ass'y	1	MU4094#						1000
56			MU5009		514 LED ass'y	1	DH128900		Connector pin	2			1000
57			MU5009		514 LED ass'y	1	DK121300		Housing	1			1000
58			MU5009		514 LED ass'y	1	DO045400		Heat shrink tube				1000
59			MU5009		514 LED ass'y	1	DQ056800		LED	1			1000
60			MU5009		514 LED ass'y	1	DR720100			1			1000
61			MU5009		514 LED ass'y	1	DW223000		UL1007 AWG26 W				1000
62	MU5009	P	MU5009		514 LED ass'y	1	MU5009#						1000
63	MU6784	R	M6506#		M526-CA01								1000
64	MV0840	P	MV0840		915BLSW1A	1							1000
65			MV2360		521C0005	1							1000

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M526-FA01(MU6508)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DO110100		Heat shrink tube								1000
2	DS353800	P	DS353800		Photo interrupter	6					Japan ArefuOL-EE-SH3		1000
3			GB6575		Fixing screw	1							1000
4			GB7776		T fixer	1							1000
5			MA2561		Name plate	1							1000
6			MA3334		Bearing	2							1000
7	MB5946	P	MB5946		Synapse	1					Takasago SM6-10201 x 2		1000
8			MB7469		Coupling	1							1000
9			MB7870		W washer	1							1000
10			MB9808		EC label	1							1000
11			MD1852		CH shaft ass'y	1							1000
12			MD3138		Cord keep	1							1000
13			MD7118		Frame	1							1000
14			MD7120		Sensor plate	2							1000
15			MD7121		Sensor plate	1							1000
16			MD7122		Plate	1							1000
17			MD7123		Spline	1							1000
18			MD7124		Shaft	1							1000
19			MD7125		Bush	1					ASK:NFEO-8LUU -> THK:LMH8LUU		1000
20			MD7128		Thrust BR	2							1000
21			MD7129		Collar 1						16 +0.2/ +0.1		1000
21			ME9654		Collar 1	2					16 +0.027/ +0.016		1000
22			MD7134		Bearing S	1							1000
23			MD7135		Bearing L	1							1000
24			MD7137		Collar 3	1							1000
25			MD7138		Flange	1							1000
26			MD7139		Drymmet	1							1000
27			MD7140		PCB base	1							1000
28			MD7143		Block	1							1000
29			MD7147		Stopper	1							1000
31			MD7412		Mouthpiece	1							1000
32			MD7415		Bracket	1							1000
33	MD9213	P	MD9213		Teflon tube	1					Both side conical shape T1x2x950		1000
34			ME4832		Spacer	1							1000
35			ME4836		PCB cover	1							1000
36			ME5768		Collar 2	1							1000
37			ME6428		Ceiling plate	1							1000
38			ME6429		Photo cut	1							1000
39			ME6430		Arm	1							1000
40	MU8164	C	ME6431		Teflon tube	1					T1x2x190 Both conical shape		1000
41			ME6432		Disk	1							1000
42	ME6433	P	ME6433		Belt	1					Three starsBear bag 60S3M246		1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
43			ME6434		Pulley 15	1							1000
44			ME6435		Pulley 60	1							1000
45			ME6436		Spacer	1							1000
46			ME6441		Pulley shaft	1							1000
47			ME6647		Sensor plate	1							1000
48			ME7272		Teflon tube	1							1000
49			ME7760		Sleeve	1							1000
50			ME7799		Sensor plate	1							1000
51			ME7800		Sensor flag	1							1000
52			ME7801		Spring 3	1							1000
53			ME7816		SP holder	1							1000
54	ME7817	P	ME7817		Spacer	1							1000
54	ME8484	P	ME8484		Spacer	1					Mold (ME4832+ME7817)		1000
55			ME7819		Cramp table	1							1000
56			MU2923		520 PM ass'y 6	1	DH128900		Connector pin	6	Oriental Motor PK268-02A(Cable300mm)		1000
57			MU2923		520 PM ass'y 6	1	DK119100		Housing	1	Oriental Motor PK268-02A(Cable300mm)		1000
58			MU2923		520 PM ass'y 6	1	DM128800		pulse motor	1	Oriental Motor PK268-02A(Cable300mm)		1000
59	MU2923	P	MU2923		520 PM ass'y 6	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)		1000
60			MU5302		514 PM ass'y	1	DH141500		Connector pin	5			1000
61			MU5302		514 PM ass'y	1	DK023100		Housing	1			1000
62			MU5302		514 PM ass'y	1	DZ241200			1			1000
63			MU5302		514 PM ass'y	1	MU5302#						1000
64	MU6775	R	MU6508#		M526-FA01	1							1000
65			MV1062		520 C0020	1							1000
66			MV1075		520 C0033	1							1000
67			MV2128		514C0025	1							1000
68	MU5528	P	MV2347		521BPRC1A	1							1000
69	MU5521	P	MV2351	1.0	521PPR04	1							1000
70	MU6776	P	MV3269		526BRLS1A	1							1000
71			MV2572		521C0035	1							1000
72			MV2573		521C0036	1							1000
73	MV2713	P	MV2713		Varistor ass'y	1					Old MV2091		1000
74	MU4396	P	MU4396		Motor driver						Oriental MotorCSD5814NDriver		1000
75	MU5303	P	MU5303		Motor ass'y						Oriental MotorPK566-NAMotor set		1000
76			MV3272		526C0001	1							1000
77			MV3278		526C0002	1							1000
78			MV3279		526C0003	1							1000
79			MV3290		526C0006	1							1000
80			MV3291		526C0007	1							1000
81			DZ119100		Ferrite Core	2					TDK_ZCAT 2032-0930		1300

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M526-FD01(MU6509)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DO110100		Heat shrink tube								1000
2	DS353800	P	DS353800		Photo interrupter	5					Japan ArefuOL-EE-SH3		1000
3			GB6575		Fixing screw	1							1000
4			MA2561		Name plate	1							1000
5			MA3334		Bearing	2							1000
6			MB7469		Coupling	1							1000
7			MB7870		W washer	1							1000
8			MB9808		EC label	1							1000
9			MD1113		T fixer	1							1000
10			MD1852		CH shaft ass'y	1							1000
11			MD7118		Frame	1							1000
12			MD7119		Ceiling plate	1							1000
13			MD7120		Sensor plate	2							1000
14			MD7121		Sensor plate	1							1000
15			MD7122		Plate	1							1000
16			MD7123		Spline	1							1000
17			MD7124		Shaft	1							1000
18			MD7125		Bush	1					ASK:NFEO-8LUU -> THK:LMH8LUU		1000
19			MD7126		Photo cut	1							1000
20			MD7127		Sensor plate	1							1000
21			MD7128		Thrust BR	2							1000
22			MD7129		Collar 1						16 +0.2/ +0.1		1000
22			ME9654		Collar 1	2					16 +0.027/ +0.016		1000
23			MD7134		Bearing S	1							1000
24			MD7135		Bearing L	1							1000
25			MD7136		Collar 2	1							1000
26			MD7137		Collar 3	1							1000
27			MD7138		Flange	1							1000
28			MD7139		Drymmet	1							1000
29			MD7140		PCB base	1							1000
30			MD7143		Block	1							1000
31			MD7147		Stopper	1							1000
32			MD7148		Disk	1							1000
33			MD7190		Teflon tube	1					T1.5x2.5x90 both conical shape		1000
34	MD7257	P	MD7257		Synapse	1					1.5 x 2.5		1000
36			MD7413		Mouthpiece	1							1000
37	MD9214	P	MD9214		Teflon tube	1					One side conical shape T1.5x2.5x950		1000
38			ME4832		Spacer	1							1000
39			ME4834		RP holder	1					to ME8278+ME7817		1000
39			ME8278		RP holder	1							1000
39			ME7817		Spacer	1							1000
40	ME4839	P	ME4839		Belt	1					Three starsBear bag 60S3M		1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
41			ME4840		Pulley 16	1							1000
42			ME4841		Pulley 48	1							1000
43			ME6438		Arm	1							1000
44			ME6439		PCB cover	1							1000
45			ME7167		Bracket	1							1000
46			ME7272		Teflon tube	1							1000
47			ME7760		Sleeve	1							1000
48			ME7799		Sensor plate	1							1000
49			ME7800		Sensor flag	1							1000
50			ME7801		Spring 3	1							1000
51			MU2923		520 PM ass'y 6	1	DH128900		Connector pin	6	Oriental Motor PK268-02A(Cable300mm)		1000
52			MU2923		520 PM ass'y 6	1	DK119100		Housing	1	Oriental Motor PK268-02A(Cable300mm)		1000
53			MU2923		520 PM ass'y 6	1	DM128800		pulse motor	1	Oriental Motor PK268-02A(Cable300mm)		1000
54	MU2923	P	MU2923		520 PM ass'y 6	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)		1000
55			MU2925		520 PM ass'y	1	DH141500		Connector pin	5			1000
56			MU2925		520 PM ass'y	1	DK023100		Housing	1			1000
57			MU2925		520 PM ass'y	1	DZ182400			1			1000
58			MU2925		520 PM ass'y	1	MU2925#						1000
59	MU6777	R	MU6509#		M526-FD01								1000
60			MV1062		520 C0020	1							1000
61			MV1075		520 C0033	1							1000
62	MU6774	P	MV3268		516BRLS2A	1							1000
63			MV2089		514C0003	1							1000
64			MV2092		514C0006	1							1000
65			MV2128		514C0025	1							1000
66	MU5365	P	MV2329		514BPRC1A	1							1000
67	MU5366	P	MV2330	1.0	514PPR12	1							1000
68	MV2713	P	MV2713		Varistor ass'y	1					Old MV2091		1000
69	MU4396	P	MU4396		Motor driver						Oriental MotorCSD5814NDriver		1000
70	MU4397	P	MU4397		Motor ass'y						Oriental MotorPK546-NAMotor set		1000
71			DZ119100		Ferrite Core	2					TDK_ZCAT 2032-0930		1300

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M526-FD11(MU6510)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DO110100		Heat shrink tube								1000
2	DS353800	P	DS353800		Photo interrupter	5					Japan ArefuOL-EE-SH3		1000
3			GB6575		Fixing screw	1							1000
4			MA2561		Name plate	1							1000
5			MA3334		Bearing	2							1000
6			MB7469		Coupling	1							1000
7			MB7870		W washer	1							1000
8			MB9808		EC label	1							1000
9			MD1113		T fixer	1							1000
10			MD1852		CH shaft ass'y	1							1000
11			MD7118		Frame	1							1000
12			MD7119		Ceiling plate	1							1000
13			MD7120		Sensor plate	2							1000
14			MD7121		Sensor plate	1							1000
15			MD7122		Plate	1							1000
16			MD7123		Spline	1							1000
17			MD7124		Shaft	1							1000
18			MD7125		Bush	1					ASK:NFEO-8LUU -> THK:LMH8LUU		1000
19			MD7126		Photo cut	1							1000
20			MD7127		Sensor plate	1							1000
21			MD7128		Thrust BR	2							1000
22			MD7129		Collar 1						16 +0.2/ +0.1		1000
22			ME9654		Collar 1	2					16 +0.027/ +0.016		1000
23			MD7134		Bearing S	1							1000
24			MD7135		Bearing L	1							1000
25			MD7136		Collar 2	1							1000
26			MD7137		Collar 3	1							1000
27			MD7138		Flange	1							1000
28			MD7139		Drymmet	1							1000
29			MD7140		PCB base	1							1000
30			MD7143		Block	1							1000
31			MD7147		Stopper	1							1000
32			MD7149		Disk	1							1000
33	MU9589	C	MD7190		Teflon tube	1					T1.5x2.5x90 both conical shape		1000
34	MD7257	P	MD7257		Synapse	1					1.5 x 2.5		1000
35			MD7306		PCB base	1							1000
36			MD7413		Mouthpiece	1							1000
37	MD9214	P	MD9214		Teflon tube	1					One side conical shape T1.5x2.5x950		1000
38			ME4832		Spacer	1							1000
39			ME4834		RP holder	1					to ME8278+ME7817		1000
39			ME8278		RP holder	1							1000
39			ME7817		Spacer	1							1000

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
40	ME4839	P	ME4839		Belt	1					Three starsBear bag 60S3M		1000
41			ME4840		Pulley 16	1							1000
42			ME4841		Pulley 48	1							1000
43			ME6438		Arm	1							1000
44			ME6439		PCB cover	1							1000
45			ME7167		Bracket	1							1000
46			ME7272		Teflon tube	1							1000
47			ME7760		Sleeve	1							1000
48			ME7799		Sensor plate	1							1000
49			ME7800		Sensor flag	1							1000
50			ME7801		Spring 3	1							1000
51			MU2923		520 PM ass'y 6	1	DH128900		Connector pin	6	Oriental Motor PK268-02A(Cable300mm)		1000
52			MU2923		520 PM ass'y 6	1	DK119100		Housing	1	Oriental Motor PK268-02A(Cable300mm)		1000
53			MU2923		520 PM ass'y 6	1	DM128800		pulse motor	1	Oriental Motor PK268-02A(Cable300mm)		1000
54	MU2923	P	MU2923		520 PM ass'y 6	1	MU2923#				Oriental Motor PK268-02A(Cable300mm)		1000
55			MU2925		520 PM ass'y	1	DH141500		Connector pin	5			1000
56			MU2925		520 PM ass'y	1	DK023100		Housing	1			1000
57			MU2925		520 PM ass'y	1	DZ182400			1			1000
58			MU2925		520 PM ass'y	1	MU2925#						1000
59	MU6778	R	MU6510#		M526-FD11								1000
60			MV1062		520 C0020	1							1000
61			MV1075		520 C0033	1							1000
62			MV2089		514C0003	1							1000
63			MV2092		514C0006	1							1000
64			MV2128		514C0025	1							1000
65	MU5365	P	MV2329		514BPRC1A	1							1000
66	MU5366	P	MV2330	1.0	514PPR12	1							1000
67	MU6779	P	MV3270		526BRLS2A	1							1000
68	MV2713	P	MV2713		Varistor ass'y	1					Old MV2091		1000
69	MU4396	P	MU4396		Motor driver						Oriental MotorCSD5814NDriver		1000
70	MU4397	P	MU4397		Motor ass'y						Oriental MotorPK546-NAMotor set		1000
71			DZ119100		Ferrite Core	2					TDK_ZCAT 2032-0930		1300

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M526-JC01(MU6511)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB088000		Breaker	1					250V,40A NRBM2100F-40AAA		1000
2			DF169200		Filter	1							1000
3			DH147700		Connector pin	16							1000
4			DH163600		Connector pin	4							1000
5			DH176100		Connector pin	1							1000
6			DO118500		Cap	4							1000
7			DO120500		Cap	20							1000
8			DW318000		WIRE AWG8 B								1000
9			DW318100		WIRE AWG8 B								1000
10			DW400500		WIRE AWG8 GYYY								1000
11			GB9787		Saddle	1							1000
12			MB9131		Model label	1							1000
13			MB9132		EC label	1							1000
14			MD3905		L1 name plate	1							1000
15			MF0242		Back cover	1							1000
16			MD7721		SW cover	1							1000
17			MD9957		Name plate	1							1000
18			ME1644		Name plate	1					Newly registered.		1000
19			MU6511#		M526-JC01	1							1000

ILLUSTRATED PARTS BREAKDOWN

AU640 (M521)

M526-JC41(MU6512)

No	Order_No	Reg	Parts_No1	Rev1	Parts_Name1	Qty1	Parts_No2	Rev2	Parts_Name2	Qty2	Remarks	ECN	Rev
1			DB088000		Breaker	1					250V,40A IULH-1-11-62F-40A-M		1000
2			DF169200		Filter	1					250V,40A LF-240U		1000
3			DH147700		Terminal	16							1000
4			DH163600		Terminal	4							1000
5			DH176100		Terminal table	1					600V,60A,3pin UF-1005-60A-3P		1000
6			DO118500		Cap	4							1000
7			DO120500		Cap	20							1000
8			DW412300		Wire AWG8 W								1000
9			DW395000		Wire AWG8 B								1000
10			DW400500		Wire AWG8 GYYY								1000
11			GB9787		Saddle	1							1000
12			MB9131		Model label	1							1000
13			MB9132		EC label	1							1000
14			MD3905		L1 name plate	1							1000
15			MF0242		Back cover	1							1000
16			MD7721		SW cover	1							1000
17			MD9957		Name plate	1							1000
18			ME1644		Name plate	1					Newly registered.		1000
19			MU6512#		M526-JC41	1							